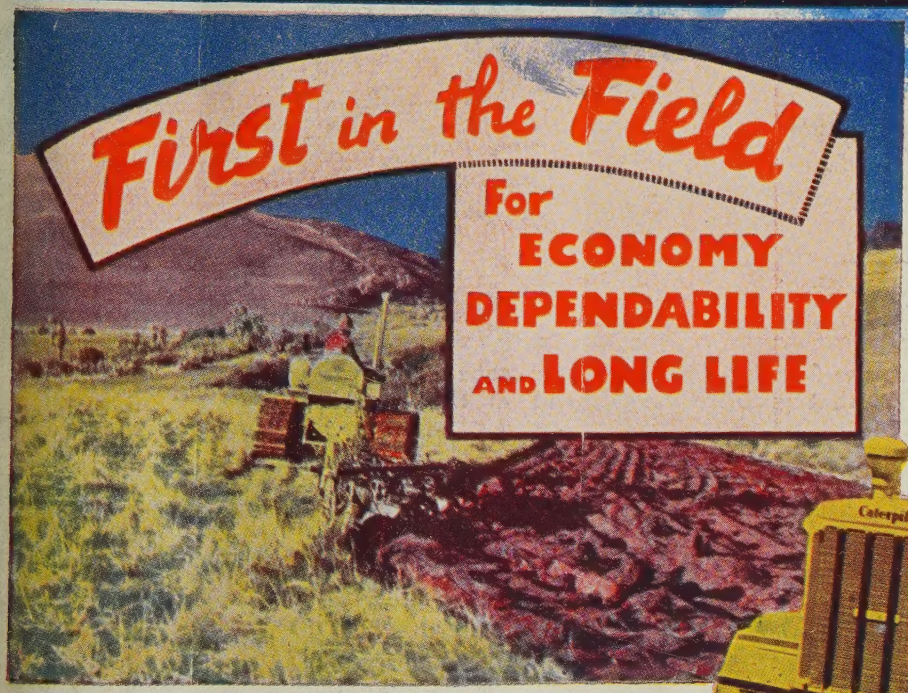
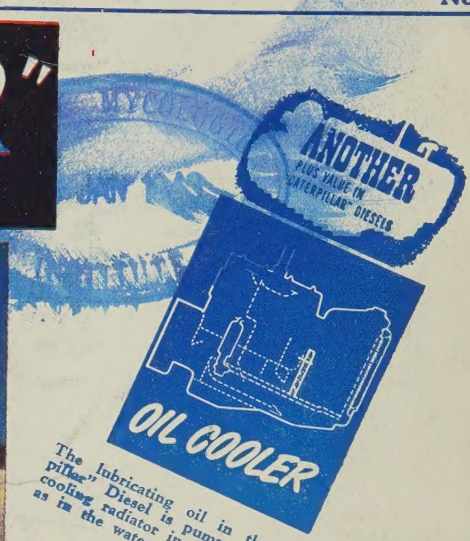
The NEW ZEALAND JOURNAL OF AGRICULTURE

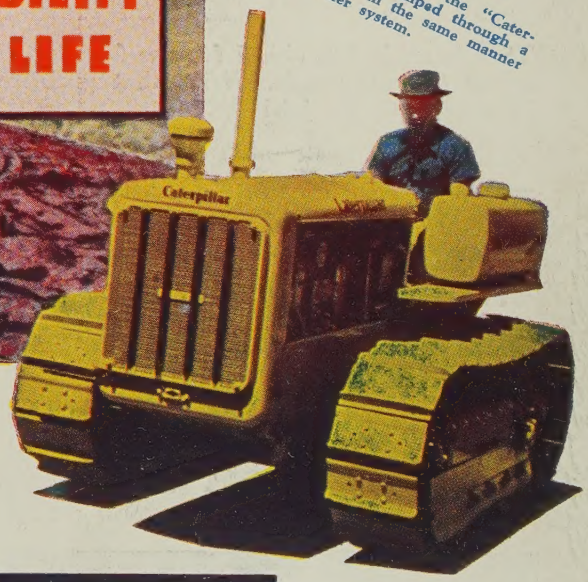
Vol. 65. WELLINGTON, OCTOBER 15, 1942. No. 4

"CATERPILLAR"
REGISTERED TRADE MARK
DIESEL TRACTORS





The lubricating oil in the "Caterpillar" Diesel is pumped through a cooling radiator in the same manner as in the water system.



25 TO 113 HORSE POWER

There's a "Caterpillar" Diesel Tractor for every job of work.

Write and state your power requirements.

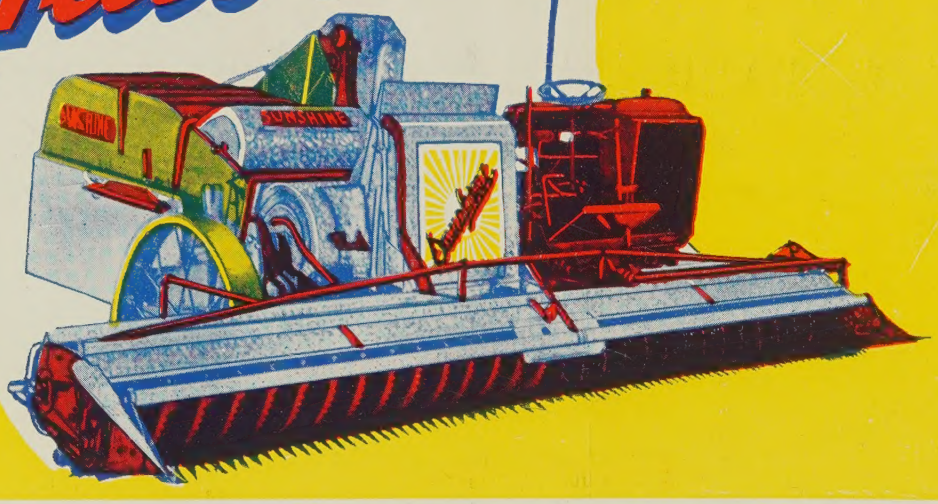
GOUGH, GOUGH & HAMER, LTD

HEAD OFFICE: CHRISTCHURCH

Branches at: Auckland, Wellington, Dunedin, Palmerston North, Rotorua, Masterton, Hastings, Timaru, Oamaru, Ashburton and Invercargill.

It sure does PAY to get a ....

Sunshine Auto Header!



There's a big job ahead for the farmer to garner bigger crops with fewer experienced harvest hands. With that problem ahead, call in the Sunshine Auto Header to do the job!

Why?

The Sunshine covers the acres more quickly than any other machine. A 12 ft. Sunshine can cover 4⅜ acres in an hour, a 14 ft., 5 1/10 acres.

With the Sunshine there are no tracks to cut. You just drive straight through.

The Sunshine, because of its efficient cutting and gathering section and its extraordinary capacity, will harvest the worst storm-flattened, tangled, or thistle-infested crop.

The Sunshine will cover an acre of ground on approximately half a gallon of fuel.

Mechanical Efficiency. A vast improvement on the machines of recent years. 3 Forward speeds, 3 Reverse speeds, 8 Tandem straw walkers.

We specialise in Header Harvesters, and regardless of the conditions existing on your farm, we have a machine to do your job. Included are the famous Sunshine engine function No. 15 and clipper header harvesters.

MASSEY-HARRIS CO. LTD.

In Association with

P. & D. DUNCAN LTD.

AUCKLAND, PALMERSTON NORTH, CHRISTCHURCH, DUNEDIN.

WRITE FOR COLOUR CATALOGUE

THE NEW ZEALAND
JOURNAL OF AGRICULTURE

Vol 65. No. 4.
October 15, 1942.
Wellington.

Published by direction of Hon. J. G. Barclay, Minister of Agriculture.

Serpentine Superphosphate • Increases Production •

By

A. H. COCKAYNE,
Director-General,
Department of Agriculture,
Wellington.

AS was to be expected the Government's decision that straight superphosphate should be withdrawn from the North Island market and replaced with serpentine super has not been received with universal favour. This has been due in the main to non-recognition of essential facts, and probably also in certain quarters that such action by the Government would not be beneficial from the individual business aspect.

What every thinking farmer must be asking himself is "what is the real objective behind the Government's decision?" This can be answered in quite a few words. The objective is to enable primary production to be increased, it being viewed, and I believe correctly, that increased primary production is intimately concerned with the whole success of our war effort. Increased primary production depends very largely on adequate labour on the farm and on adequate supplies of fertiliser.

Now as all producers know our supplies of fertilisers, particularly phosphatic ones, have been reduced to a point that makes even the maintenance of production precarious. In the North Island this year the manufacture of superphosphate will not much exceed 150,000 tons, barely one-third of the amount used in each of the two years prior to rationing. Anything that can be done to increase the effectiveness of this tonnage is therefore of national importance.

What Trials Reveal

The work of the Department has shown over the past three years that, 75lbs. of superphosphate converted into 100lbs. of serpentine-super will do the work of 100lbs. of straight superphosphate. There have been so few exceptions to this generalisation that they can be viewed as negligible and in no case has it been shown that 100lbs. of serpentine-super is inferior to 75lbs. of super, while in many cases 100lbs. of serpentine super has been demonstrated as being distinctly superior to 100lbs. of straight super. In other words the use of serpentine super instead of super increases the effective fertiliser ration of the farmer by 33⅓ per cent.

Just think of it, the use of serpentine super instead of straight super in the North Island alone places in the hands of farmers an equivalent of 50,000 additional tons of super. No wonder the Government, conscious of increased primary production being essential, and on the advice of the Department and of the Primary Production Council made the decision that all super manufactured in the North Island had to be converted into serpentine super.

It is hoped to be able to go further in the future and follow the same practice in the South Island, but unfortunately this cannot take place immediately, as adequate supplies of ground serpentine are not yet available in the south. The case for serpentine super against straight super is clear and definite, and even the opponents towards its universal use would not be prepared to say that such action does not very appreciably increase the efficiency of our available supplies of superphosphate.

"Straw-man"

The main bone of contention, or shall I say straw man that is put up in opposition to the universal use of serpentine super is that equally good if not better increase in superphosphate efficiency could be brought about by the use of super and lime, because that mixture has at times apparently given better results than serpentine super. An athlete that gives away 25 yards in a hundred and generally breasts the tape level or ahead of his competitor would certainly be acclaimed the better man, even if occasionally he is not the winner.

The case of serpentine super and super and lime is an exact parallel, and there are cases where a greater amount of super together with lime have given apparently better results than has a lesser amount of super in the form of serpentine super.

This in no way indicates that lime has an effect equal to serpentine in increasing the efficiency of super but has been used by some to condemn the Government's action in having all super manufactured in the North Island converted into serpentine-super. The essential thing is that every ton of

This list of our Branches and Agents throughout New Zealand is published for your convenience.

G.V.B. Milkers Ltd., 52 Ward Street, Hamilton.
Phone—Office, 4126. Private, 2456.
G.V.B. Milkers Ltd., Broadway South, Stratford.
Phone—Office, 711. Private, 650.
L. J. Hunt, Patea. Phone 113.
G.V.B. Milkers Ltd., 4 Rathbone St., Whangarei. Phone—Office 2685
W. Hyland, Dargaville. Phone—284.
G.V.B. Milkers Ltd., Box 115, Palmerston North.
Phone—Private, 7645.
G.V.B. Milkers Ltd., 254 Durham Street, Christchurch.
Phone—Office, 30-801.
Levin & Co. Ltd., Agents—Wellington, Masterton, Levin, Wanganui.
Thos. Shields Ltd., Invercargill. Geo. Howick, Karamea.
England & McRae Ltd., Timaru. Davidson & Omundsen, Dannevirke.
J. Ingram & Co., Nelson. J. C. Jordan, Hastings.
Park Pittar, Gisborne.
Bay of Plenty Machinery Exchange, Tauranga. Phone—395.
Norman Wells Ltd., Whitianga. Phone—38. J. Roberts, Mangonui.
J. C. O'Connor, Te Awamutu. Phone—584.

Get in touch with any of the above and learn amore about the G.V.B. Milker.

GORDON VACUUM BREAK MILKERS LTD.
Head Office—44 Albert St., Auckland, C.1. P.O. Box 1687.

To GORDON VACUUM BREAK MILKERS LTD.,
44 Albert Street, AUCKLAND, C.1.
Please send me your latest catalogue and full facts concerning the G.V.B.

NAME .....

ADDRESS .....

My herd comprises.....cows. J.A. 15/10/42

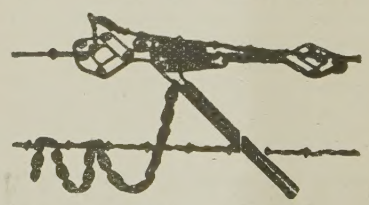
superphosphate manufactured should be made as efficient as it is possible, and research and trial have shown that its conversion into serpentine-super brings this about better than any other known way. This does not mean that reversion with lime and the use of super lime mixtures has not the same tendency but certainly not to the same degree as does serpentine super.

As has been said serpentine super means the equivalent of another 50,000 tons of super. This additional 50,000 tons of super equivalent is a remarkable achievement in our war effort and should be acclaimed as such.

If it were announced that it was possible to import 50,000 tons of super into the North Island even at a price far in excess of the present price, farmers throughout the island would clamour for its importation. Well, we cannot import any superphosphate but we can increase the efficiency of the available North Island superphosphate by the equivalent of an importation of 50,000 tons of super by the use of serpentine super. This, the Government decided should be done, and yet there are people who, on totally erroneous assumptions, decry this action with the hope no doubt of sabotaging the Government's decision.

I wonder whether they realise that their misguided and erroneous ideas represent a blow against increased production, one of our war-winning essentials.

HAYES' AUTOMATIC
SMOOTH GRIP
WIRE STRAINER
FOR BARBED OR PLAIN WIRE.



From Hawea Flat.

Dear Sirs,—I consider your Wire Strainer out on its own, it makes fencing and repairing an easy job. I can also speak highly of your Standard Lifter it is an excellent tool and a great time saver.
(Sgd.) TOM GILLESPIE.

Strainer is fitted with a 4ft. Chain, and is complete with Wire Key and Directions for use.

Hayes' Manufactures are Stocked by all Merchants.

E. HAYES & SONS,
Manufacturers,
OTUREHUA, OTAGO. Phone 4D

Properties of Phosphatic Fertilisers

IN view of the interest being taken in artificial fertiliser by farmers and others, it is felt that the following short explanations of the main types of phosphatic fertilisers will clarify many points at present not generally understood or appreciated. This short statement outlines the main properties of the fertilisers referred to hereunder:—

Superphosphate, which is the main phosphatic fertiliser used in the Dominion, is a product manufactured from raw rock phosphate and sulphuric acid. The raw rock in the past has mainly been obtained from Nauru and Ocean Islands, where it is quarried and brought to New Zealand to be finally processed and manufactured

— By —

R. B. TENNENT,
Director of the Fields Division,
Wellington.

into superphosphate. Speaking generally, to make one ton super approximately 13cwt. of rock and 7cwt. of sulphuric acid are mixed together when chemical reaction takes place during which the insoluble phosphate in the rock is converted to a water soluble form readily assimilable by plants. Superphosphate contains approximately 20 per cent. of water soluble phosphoric acid.

Superphosphate is popular because it is the quickest-acting phosphate available and has been demonstrated to be generally useful over the widest range of soil conditions. When applied to the soil, however, a considerable proportion of the phosphate is locked up or virtually lost owing to its combining with certain soil compounds. The possibility of reducing this loss is one which has exercised the minds of both farmer and research worker, and consequently the greatest problem of fertiliser research is how best the phosphate uptake from the soil by the plants may be increased. Despite its general usefulness superphosphate suffers from two other disadvantages, namely, its tendency to set after storage and its destructive effect on bags.

Reverted or **Basic Superphosphate** is the name applied to a fertiliser composed of 85 per cent. of superphosphate and 15 per cent. of lime. Speaking generally a properly reverted super is made by using approximately 10 per cent. of the lime in the burnt form, the balance of the lime being in the form of ground carbonate. The effect of mixing lime with super is to bring about a chemical change in the water soluble phosphate which is converted into a form insoluble in water but still available for plant growth. This process is known as reversion and the phosphate contained in the mixture is known as citric soluble, i.e., it can be dissolved in a weak acid solution such as obtains in most soils. Reverted super is not so quick acting as superphosphate. Its lime content has a negligible effect in correcting soil acidity, its chief function being to change the form of phosphate and to correct any excessive acidity in the superphosphate. The addition of lime does not increase the amount of phosphate in the fertiliser as is sometimes supposed. Apart from the fact that reverted super can be stored without bags being affected, this fertiliser is a safe one to sow in direct contact with any small seeds, as there is no danger of germination damage occurring as is often the case with superphosphate.

What Is Serpentine?

Serpentine Rock is not a fertiliser in its raw state. It exists in large quantities in various deposits throughout the Dominion in the form of a complex material containing chiefly silica and magnesium as well as other trace elements such as cobalt. So far as its use in the manufacture of fertilisers is concerned, its value lies chiefly in its magnesium content of approximately 30 per cent. It has been found to be useful in the prevention of certain diseases of plants associated with magnesium deficiency, and research work is at present in hand to investigate its value on magnesium deficient soils. At present, however, its use in agriculture is mainly confined to the preparation of serpentine superphosphate.

RABBIT SKINS

For Top Market Prices consign to "the Otago Farmers," located in Dunedin, the recognised selling centre in New Zealand for Rabbit and Opossum skins. Our expert graders and perfect display conditions command the confidence of all buyers.

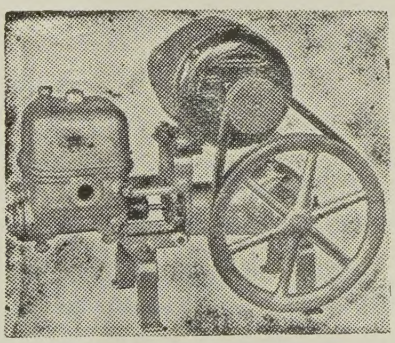
1. Prompt remittance.
2. Cash advance on receipt of skins, if required.
3. Carefully checked weights.
4. Highest prices (we are brokers only).

Small consignments up to 28lb are carried cheaper by post.

Latest Dial Scales Ensure
FULL INWARD WEIGHTS.

The OTAGO FARMERS' Co-op. Association of N.Z. LTD., Crawford St., Dunedin.

WATER PUMPING
HIGHEST EFFICIENCY—LOWEST UPKEEP



BROWN BROS.
Speedwellette

WILL PUMP AND CARRY 200 GALLONS PER HOUR ANYWHERE YOU NEED IT.

Bring plenty of water to your aid with this modern all-purpose pump. Either electrically or petrol-engine driven, it will pump water at 50 lb. pressure or a head of 115 ft.

Brown Bros. quote for pumps to handle from 100 to 30,000 gallons per hour. Write for details.

BROWN BROS.

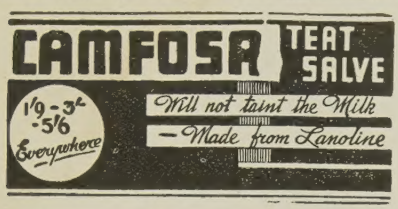
Pumping Machinery Specialists and Electrical Engineers,
590J COLOMBO STREET, CHRISTCHURCH

Serpentine Superphosphate is manufactured by the combination of 25 per cent. of serpentine rock with 75 per cent. of superphosphate. The addition of serpentine rock to superphosphate brings about a chemical reaction producing a completely new product, magnesium phosphate. It is erroneous therefore to view serpentine rock as an adulterant or filler. Magnesium phosphate has been shown by scientific research to be a most effective type of phosphate for plant use and it is less "fixed" in the soil than is the phosphate in super, that is, a greater proportion remains available for continued plant growth. In the chemical reaction colloidal silica is also formed and this has been shown to assist in the uptake of phosphate by plants and its presence further increases the efficiency of serpentine superphosphate. The presence of cobalt as a trace element is an added advantage particularly from a stock health viewpoint.

Although the total amount of phosphate in serpentine super per unit weight is less than in super, the lessened quantity is as effective, and is in point of fact, on many New Zealand soils, more effective than is the larger amount of water soluble phosphate in super. Extensive trials conducted over a period of nearly three years have demonstrated that from the chemical and physical viewpoints serpentine superphosphate is superior to ordinary superphosphate.

In effect the manufacture of rock phosphate into serpentine super will increase the volume of fertiliser available to the farmer by 33⅓ per cent.—a point of paramount importance at the present time. Serpentine super has in addition to its advantages over super as outlined above, all the good points of reverted super being free drilling, non-destructive to sacks, and non-injurious to seed, thus making it the most valuable all-round type of phosphate to use.

A further article on Serpentine Superphosphate will appear in the November issue of the Journal.



8 Thousand Million £ s for Rebuilding Britain

Following is a recent cable from London:

"Rebuilding Britain's raid-damaged buildings after the war, it is estimated, will cost £8,000,000,000. This figure is given, after a careful survey, by the President of the Building Industries National Council (Mr R. Poppock).

He estimates that, after the war, Britain will face an annual expenditure of £800,000,000 for 10 years. Between 1,500,000 and 1,750,000 building trades workers and 250,000 to 300,000 civil engineers and assistants will be needed for this work, he says."

Even now, far-sighted farmers have their eyes on the future. Many already have plans for the part **their** farms will play in world reconstruction. Chief of these is keeping their pastures up to "peak production standard" by topdressing these next two seasons. For with Britain's colossal building programme under way, millions more Britons will have extra money to spend on our farm produce—on YOUR produce! Will you be ready when the time comes?

Good advice is: Get your

Munro TRIUMPH Topdresser NOW

while it can be bought

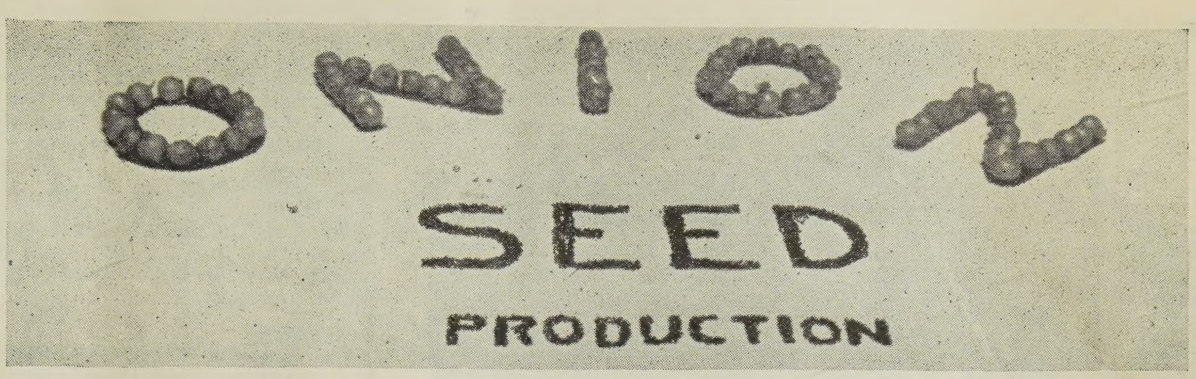
It's wiser to have a "Triumph" ready than to find there's a rush on (or maybe a scarcity) just when you want it.

Post coupon for FREE Booklet

To J. M. McCrostie,
Holloway House, Invercargill.
Please send Free Booklet on Triumph Topdresser.
Name .....
Address .....
.....

Get the facts from the N.Z. Distributor J. M. McCrostie, Holloway House, Invercargill.

J.A. 20



High Quality Seed From Marlborough

With the ordinary onion so scarce in Britain that its appearance evokes incredulous and jocular comment, it is heartening to realise that action is being taken in New Zealand to rectify the position regarding seed supplies. Several districts are contributing to this effort and one of the most active areas is Marlborough, where an efficient organisation for the production of good type onion seed in quantity for the English market and for local supply is making rapid progress.

By
D. R. WILKIE,
Instructor in
Agriculture,
Blenheim.

THREE years ago this project was in its infancy. A few sacks of onion bulbs of an approved strain were introduced into the district and sown out with a view to seed production. This could be regarded merely as an experimental venture but the results obtained showed clearly that the area was very suited to the production of this class of seed. Having established this fact the industry has progressed amazingly. In two years the number of bulbs planted for seed production under certification has increased from a few sacks to over 200 tons. A further step which is now taken locally is the production of the necessary bulbs so that the industry may be called self-supporting.

The task of arranging the production of this seed fell largely on the representatives of the mercantile firms concerned, and while the whole project is under the supervision of the Department of Agriculture, the detailed work carried out by these firms has been a large factor in bringing the work to its present stage. At the outset it was no light task, but growers have now become familiar with the growing and the certification procedure.

The onion is a biennial plant—that is, seed is not produced until the season following the sowing of the original seed. The bulbs are grown in the first season and in the next season these bulbs are transplanted to produce seed.

Basis of Certification

Certification of onion seed is confined to the variety Pukekohe Longkeeper, and is based primarily on the determination of the keeping quality of the bulbs being used, and secondly on the purity and freedom from off-type bulbs. To determine these factors, it is necessary for the application for certification to be made before the seed is sown out to produce bulbs, i.e., almost two years before the seed crop is to be produced.

During this period the Department of Agriculture undertakes the determination of the keeping quality from a specially-grown sample of bulbs and also inspects the bulbs being grown for seed production. An inspection is made prior to the harvesting of the bulbs, while a further inspection is made after the bulbs are taken into store and sorted. Thus the bulbs which are dispatched to the seed grower for planting are of the highest quality and type purity.

Sowing

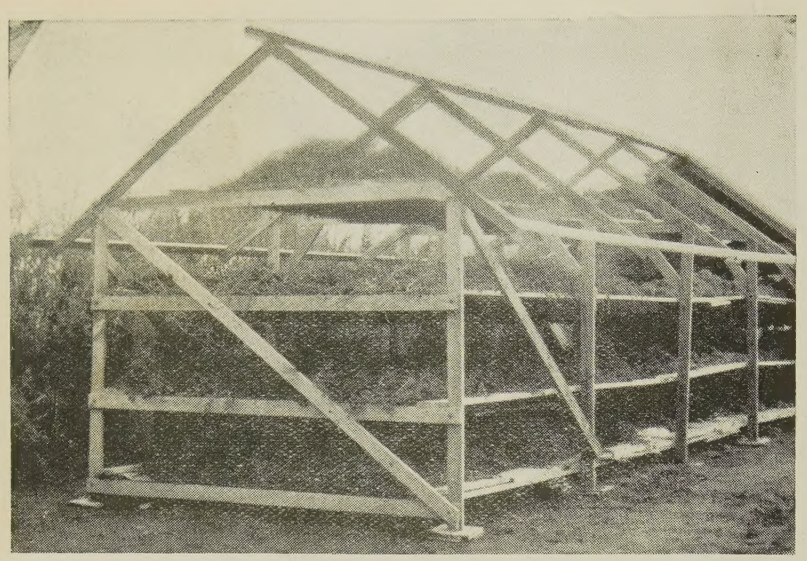
Sowing generally takes place about the middle of May, when the land should be ready to receive the one ton of bulbs per acre which quantity is the usual rate of sowing. Generally the planting is made in May or June—spring sowing has been tried, but in most cases was found unsatisfactory.

A Well
LIGHTED HOME
for Next to Nothing

Enjoy a lighted home equal to city residents, with your own lighting unit. While your milking engine is running it can be providing electric power at next to nothing! Write for our catalogue and full instructions and you can install your own electrical system.

JOHNS
P.O. Box 471X. LIMITED.
CHANCERY STREET, AUCKLAND.

ELECTRIC BULBS--We have ample stocks of 6, 12, 18 and 32 volt bulbs to provide our customers with their usual requirements.



Type of rack used for drying onion seed heads after harvesting and prior to threshing.

The onions are planted out in 30-inch rows with 12-15in. between each set; they may be planted by hand or ploughed in, but each bulb must be properly placed in position. The aim is to cover the bulbs with about three inches of soil so that during the winter they may produce their root system and be ready to shoot away as soon as warmer weather comes along.

Manuring is generally at the rate of 3-5 cwt. of blood and bone per acre, which is sown with the bulbs, and about November 1 cwt. of superphosphate is topdressed on the growing plants.

During the winter light harrowing is carried out in order to suppress weed growth. This factor is most important and if a good crop is anticipated, weeds must be kept down to a minimum. When the plants have reached a considerable height, weed suppression resolves itself into interrow cultivation. This should be shallow so as not to disturb the root system and it should be frequent.

Disease Control

By the end of November the plants are running to seed, flowering takes place, and seed formation is apparent by February. Disease control at this stage has in some seasons to be practised, the principle afflictions being Onion Thrip and Powdery Mildew. Spraying with nicotine sulphate or arsenate of lead is an effective check for the former, while dusting affected plants with flowers of sulphur gave almost complete control of mildew last season.

Harvesting the Crop

The next step is the harvesting of the crop, and this takes place about the middle of February when the seed heads turn from green to grey. The harvest continues over a period, as not all the seed heads ripen at the same time and as many as 3 to 4 cuttings may be necessary. The criterion of a head ready to pick, is when bulk of the seed has turned colour from green to grey and the first few seeds in the crown are black.

Threshing

The successive harvests of ripe heads are placed on racks in an open shed to dry out thoroughly, and take three to six weeks, depending on the weather. The seed is then threshed, a variety of machines being used. The clover huller, the header, and the small threshing machine are all capable of doing this job, but special small machines have been evolved for the work and generally these give a cleaner sample than the larger outfits.

Certified Onion Seed

After bagging on the farm the sacks are sealed and branded by the Department of Agriculture for later identification. The dressing of the seed is supervised and after packeting, the containers are sealed and tagged. Thus comes into being Certified Onion Seed.

Considering the short period that has elapsed since the inception of the venture in Marlborough the large quantity and high quality of the seed coming forward is worthy of commendation and speaks well for the co-operation between growers, merchants, and the Department of Agriculture. Increased areas are planned for the coming season.

SPEEDWAY MILK & CREAM COOLERS

Send for illustrated catalogue to Speedway Steam Products Ltd., 51 Albert St., AUCKLAND.

BLACK-OUTS need SISALKRAFT

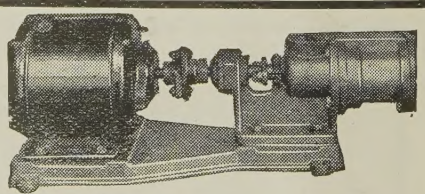
Completely opaque, strong and durable, Sisalkraft stands up to any amount of handling. Write for full details to—

HUTHNANCE & CO.
Grey St., Wellington; Moray Place North, Dunedin; and all Hardware Merchants.

"SPLIT-EM" Explosive Wedge

An absolute necessity on every farm. 1 oz. of Blasting Powder splits the toughest logs. Absolutely safe and fool-proof.

Price 19/6, plus postage.



BRENNAN PUMPS—Full range of models of this well-known pump. No valves—no internal lubrication—silent, vibrationless, self-priming. All other types stocked.

JOHN BURNS & CO. LTD.
AUCKLAND, WELLINGTON, CHRISTCHURCH, GISBORNE, GREYMOUTH, WHANGAREI.

AGENTS FOR: Diesel Engines, Marine Propulsion Engines, Electric Lighting Plants, Petrol Engines, Excavators, Pumping Plants, Concrete Mixers. Air Compressors, Electric Motors, Etc., Etc.

HORNSBY MOWER SPARES

A full range of Hornsby Mower Spares has just been landed from England. These stocks will be in great demand—so be in and book YOUR order now!

Mangels are one of the most useful winter feed crops grown in this country, and because of their high yield and nutritive value in the feeding of cattle and pigs they are unsurpassed by any of the other commonly grown root crops. It is not the intention in this article to praise or condemn mangels as a stock feed, but to point out to the farming community the dire consequences which may follow their feeding unless the old farming maxim never to feed mangels unless they have been pitted for at least six weeks is complied with.

MANGEL POISONING IN PIGS

By
W. D. ROBINSON, B.V.Sc.,
Veterinarian, Christchurch.

DURING the summer growth of the mangel plant, food substances are manufactured in the leaves and carried down into the bulbous root for storage. In the root the final chemical changes take place with the ultimate production of the mangel. When growth ceases it is the general practice to pull the crop and pit them for a period of from six weeks to two months to allow them to mature. The farmer tests for maturity by tasting a slice of mangel, and if it is sweet and sugary he concludes that it is a safe feed for his stock. He knows that mature mangels are of higher feed value than immature mangels, and consequently some changes must take place during the maturing process.

If immature mangels are fed to cattle they will generally cause scouring. This is fortunate, as it is an immediate warning to the farmer that all is not well, and he will stop feeding the roots. With pigs, however, the case is different, as generally they will show no ill effects from the immature roots until on one occasion for no apparent reason an unexpected mortality occurs.

Mortalities

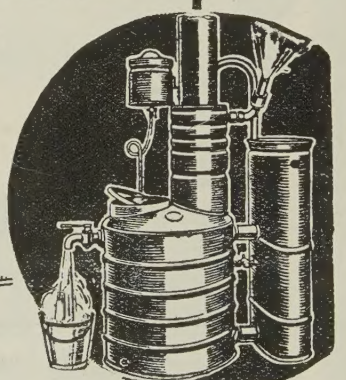
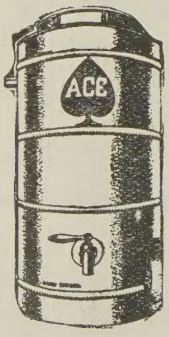
Very recently a large mortality occurred in which slightly over 200 pigs of all ages out of 600 died half to two hours after the morning feed, the bulk of which was made up of **freshly pulled** cooked mangels.

Investigational work carried out at the time and still continuing incriminated the immature mangels as the cause of death. This was no isolated case.

In the memory of veterinarians in this country from time to time mortalities have occurred among cattle and pigs following the feeding of immature mangels. In New Zealand the first recorded investigation work conducted on "Mangel Poisoning" was carried out in 1911 by Mr. B. C. Aston, a former Chief Chemist to the Department. Mr. Aston investigated a mortality in cattle which occurred in the Wanganui district, and later published an article in which he expressed the opinion that poisoning was due to the formation of nitrites from nitrates. Nitrates in undue amounts were present in the mangels.

In 1937 Mr. D. Marshall, M.R.C.V.S., reported a number of deaths occurring among pigs fed on mangels. The deaths suggested poisoning, but an analysis for common poisons was quite negative, whilst analysis of mangels revealed nitrates present in more than normal amounts.

NO BREAKS
WITH
"PEARLITE"
DIAMOND-HARD
PLOUGH SHARES
Write for details and prices.
THOS. WADDELL & Sons LTD
70 ST. ASAPH STREET, CHRISTCHURCH

GALLONS OF BOILING
WATER in less than
15 MINUTES!
"The 'SPEEDWAY'
STERILISER
suits me!"



" ACE "
DAIRY SPECIAL
ELECTRIC HEATER
For Boiling Water
Only.
The Ace Dairy Special Electric Water Heater has more features than any other Dairy Heater—at no extra cost. Secure full details from your local Agent.
16 IMPORTANT FEATURES! . . .
The Speedway raises a full head of steam, together with unlimited gallons of boiling water, in under 15 minutes, at an amazingly low cost. Full details from your local Agent, or write for literature to address below.
SPEEDWAY
OIL (OR WOOD) BURNING
STEAM STERILISERS
AND ELECTRIC DAIRY HEATERS.
Speedway Steam Products Ltd., 51 Albert Street, Auckland.
South Island Distributors: A. H. Turnbull and Co. Ltd., Christchurch.

To revert to the recent case in which 200 pigs died shortly after the feeding of freshly pulled mangels; the mangels were grown on an area manured with large amounts of pig manure, and were pulled in the afternoon preceding the mortality. They were cooked that evening for about two hours in a large concrete vat, by forcing superheated steam through pipes along the bottom of the vat. The ration was a well balanced one, the mixture being cooked until the mangels, the bulk feed, were soft. The mixed feed was left in the vat for the remainder of the night, and then after the addition of extra meat meal and grain was fed in the morning. About half an hour after feeding commenced pigs started to die and continued dying for two or three hours, at which time 200 pigs were found dead in the pens.

Symptoms

Deaths occurred fairly rapidly, and in a number of cases symptoms of pain were manifested. Muscular weakness, followed by laboured respiration, and then death ensued from asphyxiation, generally preceded by convulsions. Vomiting occurred in a number of cases.

Post-mortem Examination

At the time of the mortality a rapid post-mortem of a number of pigs was carried out, and the following observations were made:—

External appearance: Cyanotic appearance of visible mucous membranes and a marked paleness of the skin in the region of the snout and coronets.

Viscera: On opening the carcases the most obvious abnormality was a marked venous dilation of all mesenteric blood vessels. The livers and kidneys were dark red in colour and congested. The bladders and contents appeared normal. The stomachs and small intestines had an inflamed appearance, but this was due chiefly to the congestion of the small vessels. One stomach revealed an area of gastritis about the size of half-a-crown. A few small well-defined areas of enteritis were present in the small intestines of three of the four animals examined. Two of these pigs showed a slight degree of peritonitis, and it is therefore possible that the gastritis may not have been directly associated with the poisoning. The lungs were abnormally red (not dark red) and showed marked venous congestion.

It was observed at the conclusion of the examinations that the blood had a chocolate appearance. This blood change results from the conversion of haemoglobin to metahaemoglobin and is probably reasonably diagnostic of mangel poisoning. In pigs this may not be immediately observed, as, owing to the fact that the animals are not skinned and that considerable bleeding has taken place in the animal's own capillaries, the actual post-mortem incisions will not bleed freely for observation of blood colour.

This was the first occasion during the season that mangels had been intentionally fed as the bulk feed, although a few mangels had been fed among other bulk feeds. In spite of this fact and in view of previous experience, it seemed unlikely that the mangels had been the cause of death, and so samples of vat contents, other feeds used, stomach and intestinal contents were forwarded to the Gov-

NOW THAT LABOUR IS SCARCE—

Every man his own carpenter

If you can't obtain labour you can still finish or renovate your house yourself. You'll be amazed how easy it is to work with Fire-safe Gibraltar Board for lining walls and ceilings. This free book tells you how and shows you how. Accurate, easy - to - understand text and pictures show how YOU can give your home modern, fire - safe interiors at the lowest possible cost.

HOW TO GET BEST RESULTS FROM GIBRALTAR BOARD
GIBRALTAR BOARD is a QUALITY ARTICLE... Give it QUALITY WORKMANSHIP
CUTTING
CURVING
FILLING

This handy 32-page instruction book... Free

Protect and beautify your home with the fire-safe, vermin-proof wall lining that provides scope for unlimited decorative effects.

GIBRALTAR BOARD

Write now for your free copy of this useful instruction book. Use the coupon below.

N.Z. WALLBOARDS LTD.
P.O. Box 395, Auckland

Please send me a free copy of your booklet, "How to get the Best Results with Gibraltar Board."

NAME .....

ADDRESS ..... J.A.

ernment Analyst for examination for the common poisons.

These specimens revealed no trace of the common poisons, but three samples of mangel mixture taken from the cooking vat contained amounts of nitrite. The samples averaged 9.3 grs. per gallon of nitrite as nitrogen. It was then decided to carry out an analysis of freshly pulled mangels from the same area to determine the nitrate content. Freshly pulled mangels collected from the area from which the mangels in the toxic feed had been grown contained 10.2 grains per lb. of nitrate as nitrogen.

Nitrite Poisoning

In the mortality, death was due to nitrite poisoning, not nitrate, and consequently some explanation must be found to account for the chemical change which took place either during cooking, or during the period the feed was standing before feeding. Nitrates are relatively non-toxic substances and are present in all mangels in small quantities. The danger, however, lies in the fact that they may, by a simple chemical reduction, be converted to nitrites, which are highly toxic to the animal system. It has been known for a considerable time that in cattle nitrates can be converted in the animal system into nitrites and poisoning results. It is also known that certain bacteria which are heat-resistant through spore formation have the ability to rapidly convert nitrates into nitrites. It has also been proved in investigational work in other countries that plant enzymes under suitable conditions have the ability to convert nitrates to nitrites.

It is practically impossible to state with any certainty in the above mortality by what method the conversion of nitrate in the mangel to nitrite in the vat contents came about, but it is this great uncertainty which makes the mangel such a dangerous root to feed, if it has not been given ample time for the maturing process to take place. Analytical work has indicated a fairly rapid decrease in the nitrate content of mangels on storage, and according to one accepted authority (T. B. Wood) the percentage of nitrates in mangels decreased on storing for two months from 33 per cent. to 50 per cent. of the original quantity present.

Nitrate Accumulation

All plants readily absorb nitrates and ammonia which, through interaction with the products of photo-synthesis, are converted into organic nitrogen compounds, the final stage being the production of protein. A survey of available literature seems to indicate that many factors influence the accumulation of nitrates in the plant. Under warm moist climatic conditions, if the soil is rich in organic matter,

FARMERS!
Delays through shortage of labour will be unavoidable. We advise you to place your season's order now for delivery later.

WE MANUFACTURE:
EARTAGS, Sheep and Cattle, stamped with Initials, Date and Number. **EARMARKS,** Sheep and Cattle, made to any design required. **BRANDS,** Burning and Fleece. **RAM CLAMPS. TATTOO OUTFITS,** as adopted by Breeders' Associations. **HORN TRAINERS,** Etc. Send for **Free Booklet.**

- **Burdizzo Pincers** and **Daroux Emasculators** adjusted at small cost.

The FARM-ACY
A. E. FOSTER, Proprietor,
23 Morris Street, Palmerston North.

Another triumph from the makers of "Kiwi" products

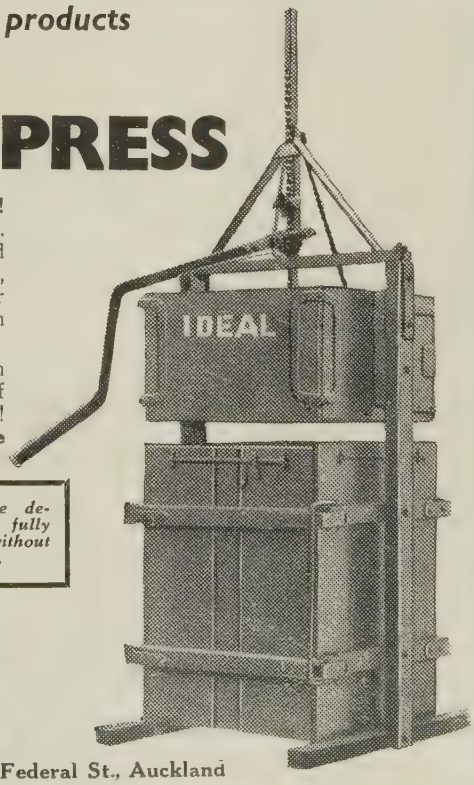
THE "IDEAL"
ONE-MAN WOOL PRESS

Sold at a price which creates a new standard in Wool Press values! The "Ideal" press is designed especially for the smaller wool grower. It is essentially a one-man press, simple and easy to operate, and it's strongly made from selected timber and heavy iron work, thoroughly bolted everywhere. The "Ideal" occupies little floor space and can be worked easily in a shed 10 ft. high. When not in use it occupies very little space.

One man can make a tight, neat and compact bale in short time with the "Ideal," and we guarantee a 42 in. pack to press a 350 lb. bale of wool. Don't buy any wool press before investigating this production! **Consider these advantages and write us for full details about the "Ideal" without obligation.**

- EASY FOR ONE MAN TO HANDLE.
- NO TOP BOX TO TILT OVER.
- NO WIRES OR ROPES.
- NO WORM GEAR OR GROOVE PULLEY.
- NO BLOCK AND TACKLE REQUIRED.

Write for free descriptive leaflet, fully illustrated, without obligation.



M. J. HOOPER & CO., LTD.

Office and Showrooms: Federal Buildings, 97 Albert St. Works: 90 Federal St., Auckland

ESTABLISHED 1849

A mewing cat is never a mouser

IT is the up-and-doing man who makes a good citizen In times of Peace, when the world is building up its prosperity, the useful citizen is the one who works and conserves, so that he and his race may have strength to withstand the difficult days that are sure to lie ahead.

When War comes, he does not shirk or whine — "a mewing cat is never a mouser" — but he puts on uniform, or works overtime in field or factory to support the forces with the sinews of war. His reserves of character and of funds go to make the Nation's strength.

Already the members of the A.M.P. Society — out of their carefully conserved savings for Life Assurance — have loaned the New Zealand and Australian Governments over £51,000,000. They will go on increasing this contribution, if necessary, to the tune of about £500,000 a month, until Victory is won.

A.M.P. SOCIETY

A sure friend in uncertain times

THE LARGEST MUTUAL LIFE OFFICE IN THE EMPIRE

Established 1849. (Incorporated in Australia)

Head Office for N.Z.:
CUSTOMHOUSE QUAY, WELLINGTON.

W. T. IKIN, Manager for New Zealand.

bacterial action is rapid, with production of large amounts of nitrites. Reports of high nitrate content of ryegrass have appeared, and here the nitrate supply to the plant seems to have been the dominating factor.

Effects of Cooking

The indications are that cooked mangels are more toxic to stock than raw mangels. The cooking temperatures may accelerate the conversion of nitrate to nitrite, but probably more important is the fact that nitrites, which are soluble, will be dissolved out into the water and consequently pigs drinking this will receive practically the full nitrite content of the mangels in one dose. If conversion from nitrate to nitrite in raw mangels has not occurred, the pigs will receive the toxic substance more slowly, dependent on the rate of digestion. Mortalities have occurred, however, on raw mangels; therefore this is no excuse to feed immature mangels in the raw state.

A report of a mortality among pigs in Soviet Russia states that "sudden deaths among pigs during winter months one to two hours after feeding were found to be due to poisoning by nitrates contained in boiled turnips, with which they were fed and which had been grown on nitrated ground. Raw turnips were harmless and turnips without artificial manure were less poisonous than those on which a chemical nitrate fertiliser had been used." The above is a mortality on turnips, but it does indicate the effect of cooking and of nitrogenous manuring.

Conclusions

The great danger in feeding immature mangels lies in the fact that they can frequently be fed without any ill effects. Every year all over the country farmers feed mangels either straight from the paddock or after an insufficient period of pitting. This is generally done not because the farmer thinks it is the right thing to do, but because of feed shortage, economic reasons or necessity. It cannot be stressed too forcibly that no circumstances justify the risk of a high mortality. It is only when a high mortality has occurred that the danger is fully appreciated, but undoubtedly each season numerous small mortalities occur, which are not reported or not recognised as mangel poisoning.

FARM LIGHTING BATTERIES

New plate groups to replace worn Delco and other make cells from 10/-. Guaranteed 2 years, supplied to fit any make glass or rubber jars. State make, number plates per cell, dimensions of jar.

Rokfire Electric Batteries Ltd.
47 Tory St., Wellington.

Grass Mixture For Pumice Soils

—By—
C. S. DALGLIESH,
Late Fields Instructor,
Rotorua.

WHEN considering the question of a suitable pasture mixture for sowing down areas in the pumice lands of the Central Plateau of the North Island, there is overwhelming proof that under thorough practical methods of cultivation, manurial treatment with available phosphates up to the limit allowed by rationing at the time of laying down, followed by annual maintenance topdressings of a like amount and combined with good farm management in stocking and control of pasture growth, excellent pastures result from the sowing of certified grasses and clovers.

In the pioneering farming of pumice lands, a seed mixture much used by farmers, was 8lb. to 10lb. of Hawke's Bay perennial ryegrass, 5lb. Italian ryegrass, 8lb. cocksfoot, 2lb. timothy, 2lb. crested dogstail, 4lb. red clover, 2lb. alsyke, and 1lb. white clover per acre. A few pounds of Meadow Foxtail were sometimes included in sowings on the heavier soils. Such a mixture resulted in a heavy clover growth retarding the development of ryegrass.

For the first few years these pastures were dominated by red clover which kept the pasture open. However, with subsequent good management, use of stock and suitable manurial treatment, close swards formed after a number of years. Thus, today, some 20 years later, many excellent pastures developed from these seed mixtures, are to be seen on the pumice lands.

Sound Management

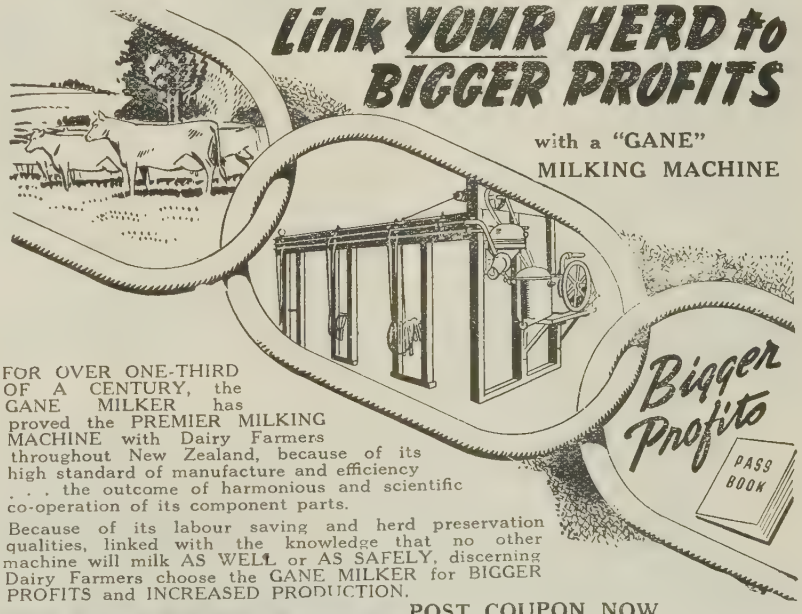
The grass seed mixtures used in the first sowings on the Ngakuru pumice area near Rotorua, consisted of perenial ryegrass 22lb., Italian ryegrass 5lb., cocksfoot 10lb., crested dogstail 3lb., red clover 2lb., alsyke 1lb., and white clover 2lb. The bulk of the country was sown down in 1930 and 1931, and pastures are still good where sound, practical management prevails.

Where management has allowed understocking, over-stocking, and lack of attention to the necessary annual maintenance in topdressing, the pastures are certainly not up to the standard which can be attained on this country. Where over-stocking has been indulged in, white clover is dominant with cocksfoot sub-dominant and ryegrass weak. Where under-stocking has prevailed, cocksfoot is dominant with ryegrass and white clover subdominant, while on well-managed areas, excellent pastures with good density of ryegrass, cocksfoot, and white clover are to be found. Thus we have three different types of pastures from a similar grass seed mixture sown on the one class of country, the difference being due to subsequent management.

The sowing of 10lb. of cocksfoot per acre appears a heavy seeding, but, under controlled growth management, either by grazing alone or grazing assisted by the mower, it has not proved out of reason. Different treatments during growth control the development of the plant. Under management which keeps the soil in a state of high fertility, a close vigorous pasture is formed with ryegrass prominently the major constituent, and the cocksfoot will be found to be small in leaf, blending well with the ryegrass and white clover; but, where control is not exercised cocksfoot will dominate, re-

MORE REAL FEATURES
than any other
Fencer
For details of this low-priced Fencer, write:
SPEEDWAY
Steam Products Ltd.
AUCKLAND
51 Albert St.,
(2 Years Guarantee)
SPEEDWAY
ELECTRIC FENCER

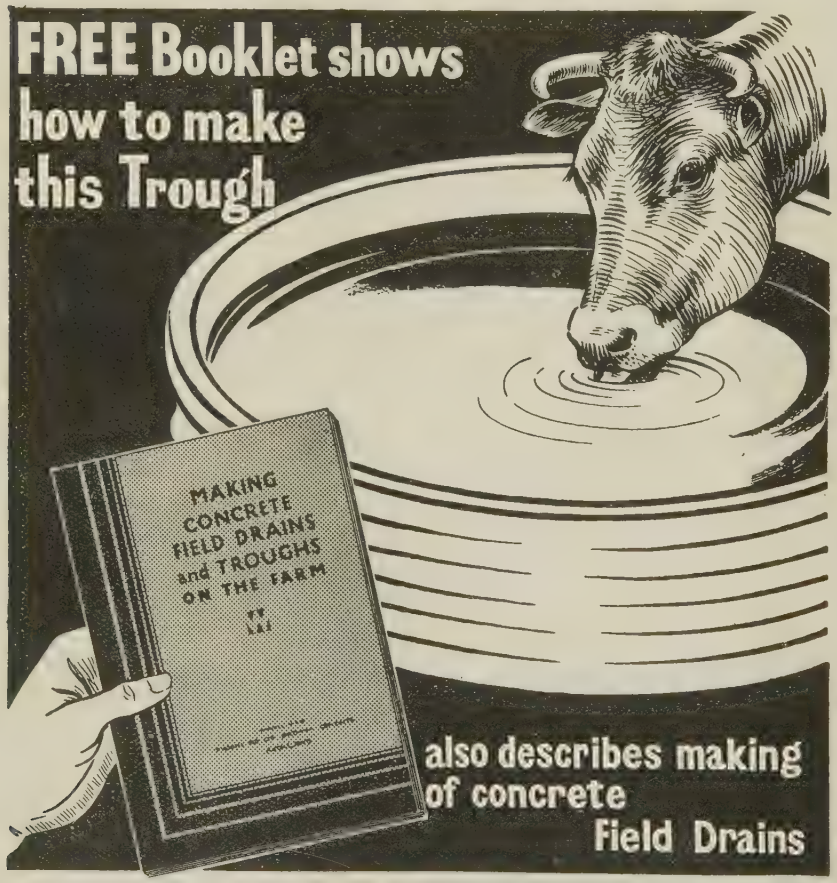
Link YOUR HERD to BIGGER PROFITS
with a "GANE" MILKING MACHINE



FOR OVER ONE-THIRD OF A CENTURY, the GANE MILKER has proved the PREMIER MILKING MACHINE with Dairy Farmers throughout New Zealand, because of its high standard of manufacture and efficiency . . . the outcome of harmonious and scientific co-operation of its component parts.
Because of its labour saving and herd preservation qualities, linked with the knowledge that no other machine will milk AS WELL or AS SAFELY, discerning Dairy Farmers choose the GANE MILKER for BIGGER PROFITS and INCREASED PRODUCTION.
GANE
MILKING MACHINE CO. LTD.
GANE BUILDINGS, ANZAC AVENUE
AUCKLAND
Branches at Hamilton, Whangarei and Palmerston North
POST COUPON NOW.
GANE MILKING MACHINE CO. LTD.
Gane Bldgs., Anzac Ave., Auckland.
Please send me Free Illustrated Literature on the Gane Milker.
I milk.....cows.
NAME .....
ADDRESS .....
.....J.15

A two-year-old pasture on pumice soil of a permanent grass mixture as recommended, established under cultivation, consolidation, adequate manuring, and stock management.

A six-year-old pasture established and maintained under conditions similar to that on the left.


FREE Booklet shows how to make this Trough
MAKING CONCRETE FIELD DRAINS and TROUGHS ON THE FARM
also describes making of concrete Field Drains

WRITE NOW FOR THIS OR ANY OTHER CONCRETE INFORMATION

WILSONS N.Z. PORTLAND CEMENT LTD.

STAR Cement for durability.

WILSONITE Rapid Hardening Cement where speed is essential.

REPELLO extra Water-proofed Cement for Tanks, Troughs, etc.

SOUTH BRITISH INSURANCE BUILDINGS, SHORTLAND ST., AUCKLAND

sulting in suppression of the ryegrass, and an opening up of the sward. Thus a pasture of lower stock-carrying capacity is produced.

Trials

In the early stages of breaking-in large tracts of the pumice country by the Department of Agriculture, an area was set aside for trials with additional grasses and clovers sown with the seed mixture mentioned. These additional constituents were as follows:—

Plot 1.—Timothy 6lb.

Plot 2.—Paspalum 10lb.

Plot 3.—Subterranean clover 3lb.

Plot 4.—Lotus major 2lb. per acre.

Both spring and autumn sowings were put down. Lotus major made fair establishment and growth in the early stages of pasture development, but as ryegrass and white clover became vigorous and dense, the competition proved too strong for the Lotus major. In three years' time, there was none to be found. Subterranean clover also made fairly good establishment, but did not survive more than one year. Paspalum could be regarded as a complete failure, as only a few plants would be noted in the second year, and these were quickly suppressed by vigorous ryegrass and clover growth. Timothy made quite a fair establishment, but in no way proportionate to the heavy seeding of 6lb. per acre, and has never been prominent in the pasture under either grazing or haying conditions.

Establishing pastures under the system of bringing the soil to a high state of fertility by liberal manuring and stock management, and thus procuring a high-class, close sward in quick time, is ideal for the development of ryegrass, white clover, and cocksfoot, which are thus in strong competition with other grasses and clovers. It does not appear worth while to include others such as timothy and subterranean clover, under these conditions.

A hay crop on pumice soils showing a large amount of timothy—grass seed mixture sown—10lb. perennial ryegrass, 8lb. cocksfoot, 2lb. crested dogstail, 3lb. timothy, 3lb. red clover and 1lb. white clover per acre. Manurial treatment 1½ to 2cwt. superphosphate per acre, in early stages, later received 3cwt. super per acre in annual topdressings. Sown down before fertiliser rationing was in operation.

Recommended Seed Mixtures

In the sowing of grass seed mixtures on Ngakuru country after the first year Italian ryegrass, crested dogstail, and alsyke, were omitted, and perennial ryegrass increased to 25lb., as can be seen from the following mixture:—

Permanent Pasture Seed Mixture:	
Perennial Ryegrass ..	25lb.
Cocksfoot	10lb.
Red clover	2lb.
White Clover	2lb.
	39lb. per acre

Where conditions of cultivation and manurial treatment are such as do not bring the soil to a high state of fertility, pasture establishment is slow and the competition of ryegrass and clover is not sufficiently strong to retard the development of the slower-growing grasses.

Prolific Growth

Established under a system providing thorough cultivation and consolidation, adequate manurial treatment and stock management, the above seed mixture will produce a first-class dairying pasture economically and rapidly. Although only 2lb. of red clover are sown per acre, prolific growth usually occurs, and this must be controlled. Otherwise it will be detrimental to ryegrass development.

Where pastures are put down with less attention to cultivation, consolidation, and manurial treatment, establishment will be slow and with some invasion by inferior grasses and weeds. If a farmer desires to sow timothy, 2lb. to 3lb. per acre are quite sufficient. Paspalum need be considered only in the warmest locations:

Grass Seed Mixture for Steep Hill Sides:	
Perennial ryegrass ..	12lb.
Crested dogstail ..	4lb.
Cocksfoot	6lb.
Brown top	2lb.
Red clover	1lb.
White clover	2lb.
Lotus Major	1lb.

On hill country it is difficult to give consolidation at the time of seeding, so establishment will be slow; but, as white clover spreads, and consolidation is brought about by stock grazing, pastures develop satisfactorily.

These mixtures appear to give general satisfaction. Timothy, crested dogstail, paspalum, subterranean clover, and Lotus major, are frequently included in permanent pastures. However, their inclusion is hardly warranted in a first-class dairying pasture, as they produce little in a sward of vigorous ryegrass, cocksfoot, red clover, and white clover.

Dry Stock Pasture

In fields some distance from the homestead, which are used mainly for grazing dry stock, and for winter feed production, a lighter seeding of ryegrass, and the inclusion of these other grasses, will produce an excellent dry stock pasture. Such pastures take less management than where ryegrass is dominant.

A five-year-old pasture. Although a liberal seeding was sown, proper cultivation and consolidation was lacking, and manurial treatment was scant, hence the invasion of fog, sweet vernal, and suckling clover. More liberal topdressing given the past three years has brought away good white clover growth.

For the sowing of an area in temporary pasture, where such a course is warranted, the following mixture is suggested:—

Temporary Pasture Seed Mixture:	
Italian ryegrass ..	25 to 30lb.
Red clover	6 to 8lb.

TERRIFIC WHITE HEAT 2000° FAHRENHEIT

SPELLS DOOM FOR NOXIOUS WEEDS!

Use the BEST BURNER—science's newest discovery—for Nassella Tussock, Blackberry, Gorse, Rushes; sterilises poultry houses, floors, yards; burns off drain sides, water races, gravel paths.

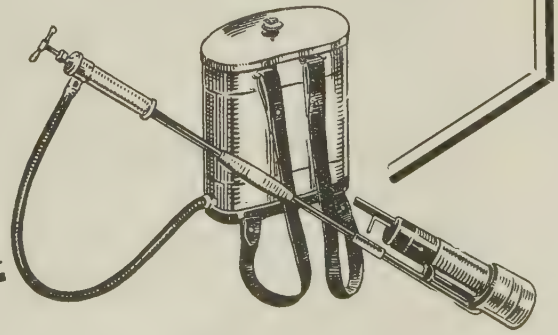
IT IS *NOT* A FLAMETHROWER

Weighs only 28lbs. fully charged; requires no pressure pumping; burns only ½-gallon of diesoline an hour—cost approximately 6d.

SAVE TIME — LABOUR — MONEY — with a BEST BURNER

Send for Free Pamphlet to the Manufacturers:

The
BEST BURNER LTD.
31-33 Tuam Street,
Christchurch.
(P.O. Box 291)



LABOUR?
MATERIALS?

THE COUNTRY IS SHORT OF BOTH . . .

Therefore order your Machines and Spare Parts well ahead and allow us to PLAN PRODUCTION

PLANNED PRODUCTION means that Labour and Material are used to the Best Advantage.

YOUR BENEFIT is that the machine you want to use is ready at the right time.

BOOTH MACDONALD

& CO. LTD.

Head Office - - - CHRISTCHURCH

Factories at Christchurch and Penrose, and Branches throughout New Zealand.

Swollen joints and lameness are quite frequently found in pigs in New Zealand. Observations by the author have shown that about 67 per cent. of these cases are due to swine erysipelas infection. Other forms of erysipelas are also observed, and there was an outbreak of the acute septicaemic form in connection with the swine fever epidemic in 1933. Such septicaemic outbreaks may occur at any time, and the authorities responsible for the status of health in our livestock are continually on guard to prevent them.

ERYSIPELAS IN PIGS

By W. G. FISCHEL, Dr.Med.Vet.,
Animal Research Station, Wallaceville.

SWINE erysipelas is prevalent in Europe and the greater part of the U.S.A., and, especially in its acute septicaemic form, it is the cause of great economic loss in these parts of the world. The only means of controlling severe outbreaks is wholesale protective vaccination of pigs in affected districts and serum treatment of affected animals.

The causal organisms of swine erysipelas (*Erysipelothrix rhusiopathiae*) are found in the presence of decomposing nitrogenous material. Although pigs are most commonly affected, the disease may occur also in sheep (joint ill), cattle and poultry; there is some reason, however, to believe that the strain of the organism responsible for joint ill in sheep may differ slightly from that in the pig. In man, infection is mainly observed after the organisms have gained entry through wounds.

Forms of Erysipelas Infection

Three forms of the disease are known to occur in pigs:—

1. The **exanthematous** form (nettle rash or urticaria), in which diamond-shaped red wheals appear on the skin; there is usually a temporary disturbance of health with fever and loss of appetite at the onset of the disease and recovery takes place in 3-10 days.

2. The **acute septicaemic** form, which sets in suddenly with severe symptoms of illness (high fever, dullness, inappetence); it sometimes develops from the exanthematous form. The skin assumes a red colour, at first in patches, but later extending rapidly over the whole body. The death rate in this form is usually very heavy (up to 80 per cent.). In very severe cases death occurs before the red discolouration of the skin appears, and these cases are called white erysipelas (rouget blanc).

3. The **chronic** form is observed when the causal organisms settle down in various organs producing a local infection. Thus **arthritis** (joint ill) results when the organisms affect the joints, setting up an acute inflammation with swelling and pains, and causing lameness. Another form affects the valves of the heart—**endocarditis**—causing cauliflower-like outgrowths. These changes interfere with the normal function of the heart and may cause sudden death due to heart failure. An after-effect of the affection of the skin may occur as **gangrene**, when large areas of the skin undergo necrosis and are eventually shed, exposing the underlying tissue.

It was formerly thought that the chronic forms developed only as a sequel to the acute or urticarial type of infection. Recent observations and experiments, however, have shown that chronic forms may occur in places where the acute form has never been seen. The local differences in the form of disease can be explained by changes in the disease producing properties of the causal bacteria, or different susceptibility of certain breeds or strains of pigs. There are also various environmental conditions which adversely affect the susceptibility of the animals, such as heavy infestation with internal parasites, sudden change of the diet, exposure to heat or cold, fatigue through transport or excessive fattening.

WAUKESHA ENGINES

DIESEL 18 to 333 H.P.
GASOLINE 5 to 375 H.P.

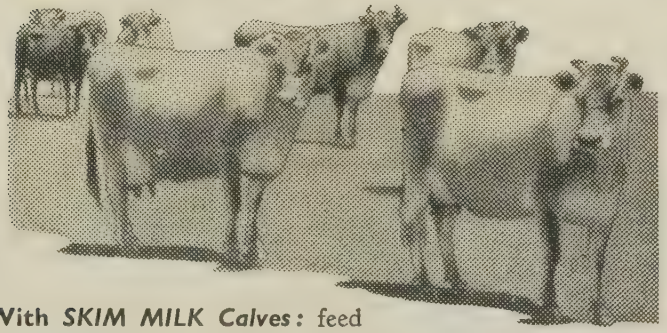
Industrial Automotive, Agricultural and Marine

Builders of dependable Engines since 1906, WAUKESHA produced in 1917, in record time, the power unit for Uncle Sam's first military truck. Today WAUKESHA Engines are providing power for thousands of Military Vehicles, Patrol Boats and Defence Industries. WAUKESHA can solve your power requirements. For engineering data consult—

N.Z. Distributors:

MOTOR SPECIALTIES LTD.
80-86 ANZAC AVENUE, AUCKLAND, C.1.

TODAY'S MOOSE FED CALVES make TOMORROW'S HERD



With *SKIM MILK Calves:* feed 2 ozs. Moose daily, rising gradually to 4 ozs.

With *WHEY FED Calves:* feed 3 ozs. Moose daily, rising to 6 ozs.

Moose can be fed in the early stages by mixing first with boiling water and then with Skim Milk or Whey. Later just feed dry in the bottom of the buckets after the by-product.

Feed Moose to your Calves — see the DIFFERENCE good feeding makes.

Write today for free literature — and profit later from a better herd.

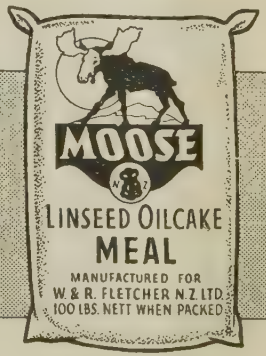
★ Moose Oil-Cake Meal is RICH IN FAT which remedies the deficiency of Fat in Whey and Skim Milk. Each bag of Moose contains approximately 1 gallon of Linseed Oil.

★ Moose also supplies rich easily digested nourishment in a form the youngest calf can handle.

★ Moose is a COMPLETE CALF FOOD. Moose keeps calves vigorous, healthy and growing fast.

MOOSE

LINSEED OIL CAKE NUTS AND MEAL



M.1.24

Write **W. & R. FLETCHER (N.Z.) LTD.** P.O. Box 663, Wellington, for free information on latest methods of Calf Feeding.

Chronic Infection

Conditions in New Zealand have so far favoured the occurrence of the chronic types and only one serious outbreak of the septicaemic form has been observed here when acute erysipelas infection was confirmed by bacteriological tests in a litter of sucking pigs during the swine fever epidemic of 1933. The drastic measures adopted to stamp out swine fever prevented also the further spread of the erysipelas infection.

There is always the possibility that uncontrollable changes in the causal organisms or in the environmental conditions of the susceptible animals may favour the development of the acute form and severe outbreaks thus result. This is what happened in the U.S.A., where the disease changed in one district from the chronic to the acute type about 20 years ago, and as such is now spreading over the whole continent.

The incidence of arthritis in New Zealand is illustrated by the statistics on this condition as a cause for rejection of pigs killed for export. An analysis of the figures over a period of four years (1937/38—1940/41) and covering the whole Dominion shows that out of a total of 3,243,280 pigs, 15,224, or 0.47 per cent., were rejected for export owing to the presence of arthritis. In that number the pigs which were totally condemned are not included; such total condemnation on account of the general involvement of the joints and poor condition of the carcase represented some 8 per cent. of the affected animals, thus bringing the total incidence of arthritis to 0.51 per cent. of pigs slaughtered for export. Figures for the Auckland Municipal Abattoir over a period of five years (1936-1940) are somewhat higher, and reveal an average incidence of 0.73 per cent. affected pigs.

Cases of erysipelas endocarditis and nettle rash have also come to notice, and in one recent case of gangrene of the skin examined at this laboratory, the condition was proved by bacteriological examination to be erysipelas.

Erysipelas—Urticaria (Diamond Disease). Carcase of a pig as observed in one of the meatworks.

[*Photograph, Dumbell* (1938).

Cause of Arthritis

Investigations are being carried out at the Animal Research Station, Wallaceville, to determine the incidence of erysipelas organisms in cases of arthritis as found on meat inspection in the abattoirs and meat works. Affected joints, internal organs, tonsils and the regional lymphatic glands from pigs affected with arthritis in one or more joints are forwarded to the laboratory for bacteriological examination, and in a number of cases samples of blood are included for serological examination. On arrival at the laboratory, the joints and organs are incised with sterile instruments, portions of them are seeded into special media for bacteriological examination, and the type of lesion present in the joints is noted.

Pigs affected with erysipelas-arthritis show acute or chronic lameness and are usually backward in condition owing to the partial immobilisation of the affected limbs. The muscles of the affected legs become more or less atrophied. Symptoms of arthritis usually appear before the pigs have reached four months of age; the swelling of the joints due to exudation into the joint capsule and new formation of fibrous and bony tissue around the affected bones are, however, still noticeable in pigs of baconer stage. In the acute form of arthritis large amounts of bloodstained fluid in the joints, and swelling and club-shaped outgrowths of the membrane lining the joint cavity are the main features. In the old-standing chronic cases but little fluid is present, and the surface of the joint cartilage is pitted and eroded; the action of the joint is impaired by external and internal adhesion.

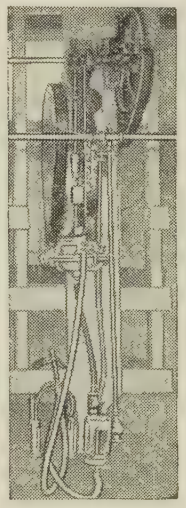
Up to the present time 229 joints from 96 cases of arthritis have been examined. In 52 cases erysipelas organisms were isolated from one or more joints. From twelve further cases, although the lesions were typical for erysipelas infection, the causal organism was not recovered; this might be due to an overgrowth of contaminants or to the fact that the causal organisms had lost their viability or had died out. The percentage of arthritis due to infection with erysipelas was thus determined as

JERMOL HELPS TO INCREASE FERTILITY AND REDUCE STERILITY LOSSES!

Science's newest discovery, rich in Vitamin E, helps overcome sterility and ensures normal breeding. Countless laboratory experiments prove that when apparently sterile animals are fed a substance rich in Vitamin E such as wheat germ oil, normal breeding is assisted and losses reduced. The wheat germ oil of highest potency and purity is Jermol. For successful breeding of cattle, horses, sheep, pigs and poultry, use Jermol.

Obtainable from all stock agents or from the sole N.Z. manufacturers:
D. H. BROWN & SON LTD., Moorhouse Avenue, Christchurch, C.1.

"New Departure"



"INDIVIDUAL UNIT"

Milker

offers an open challenge in the milker field, and in every claim for advantages asserts its superiority.

It is the world's **Fastest, Safest, Self-stripping Milker.**

Recent discoveries still further appreciate the efficiency of this remarkably fast, natural action milker. Remember! No other make of milker can claim one single advantage in which the "New Departure" is not superior. It still leads on exclusive points. Before deciding, see the "NEW DEPARTURE" MILKER.

For further details (see previous issues of this paper) write for leaflets.

J.E. Haywood Ltd.

ANZAC AVE.—P.O. Box 1435—AUCKLAND

J.A. 15/10/42

Erysipelas—Endocarditis. Heart of a pig showing extensive vegetations on the heart valves.

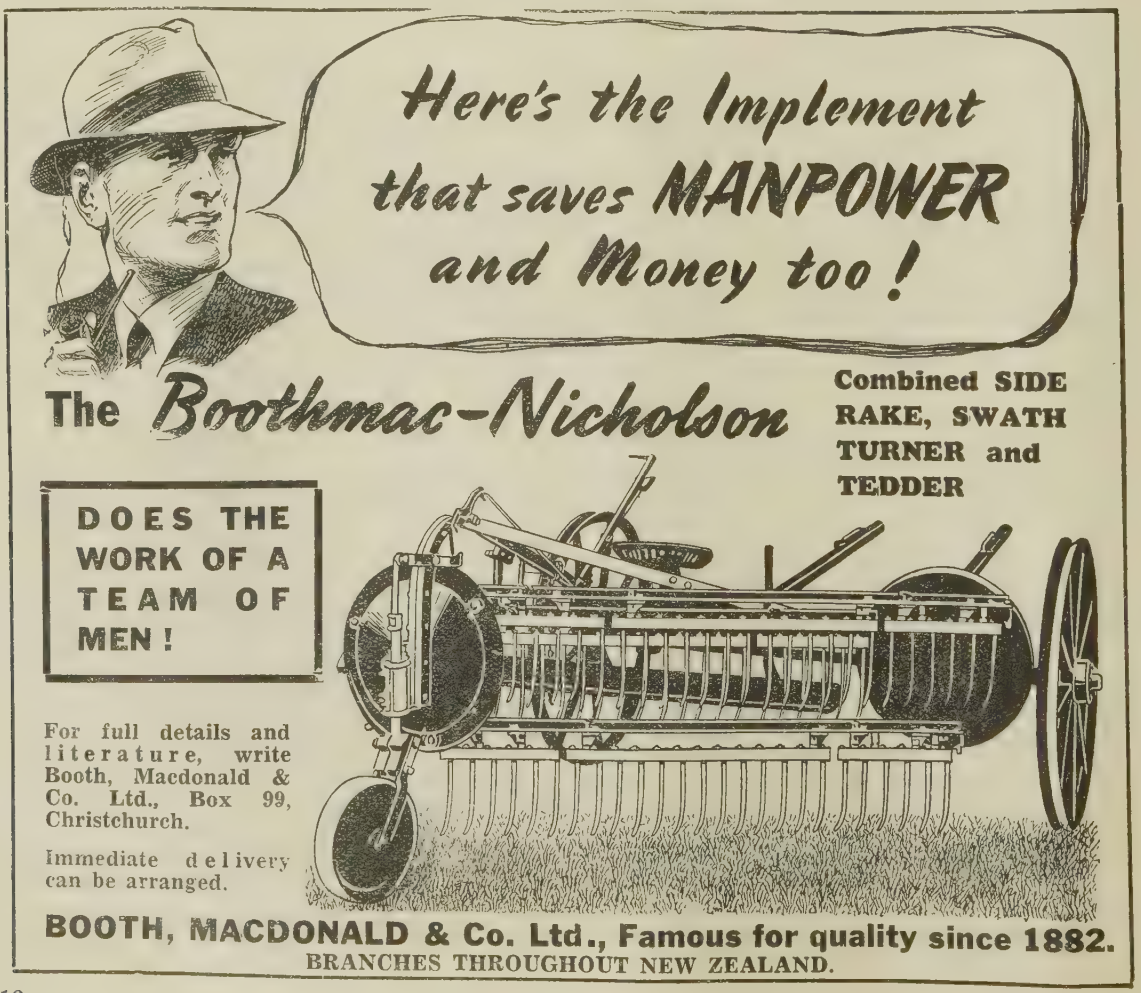
[*Photograph, Miss E. E. McKenzie* (1942.)

54.2 per cent. and probably 66.7 per cent. of all the cases. In a number of cases the erysipelas organisms were also isolated from the regional lymphatic glands, the tonsils or the internal organs; these findings prove that the causal bacteria in some instances at least are not localised at the seat of infection, but are widely distributed in the body of affected animals.

In the remaining 32 cases the swelling of the joints was due to other causes. Infection with pus-forming organisms was found in 17 cases and tuberculosis in one case; six showed lesions resulting from sprains or fractures and eight were classified as rheumatoid arthritis.

Cases of valvular disease of the heart (endocarditis) and a case of gangrene of the skin coming from farms where erysipelas arthritis was known to occur were also confirmed to be due to infection with swine erysipelas.

Agglutination tests following the principle of the blood test as carried out for contagious abortion showed very good correlation between the presence of erysipelas arthritis and the agglutination titre. Blood sera


Here's the Implement
that saves MANPOWER
and Money too!
The Boothmac-Nicholson
Combined SIDE RAKE, SWATH TURNER and TEDDER
DOES THE WORK OF A TEAM OF MEN!
For full details and literature, write Booth, Macdonald & Co. Ltd., Box 99, Christchurch.
Immediate delivery can be arranged.
BOOTH, MACDONALD & Co. Ltd., Famous for quality since 1882.
BRANCHES THROUGHOUT NEW ZEALAND.

from pigs where erysipelas infection was proved bacteriologically all showed a positive agglutination test; in cases where the bacteriological findings and the type of lesion were not suggestive of erysipelas the agglutination test gave negative results.

Conclusions

It has been shown that arthritis as a cause of total or partial condemnation of food animals is of considerable importance to the community; the relatively high incidence of erysipelas infection as a causal agent of arthritis indicates that this infection is not a minor trouble and is well worth following up.

Furthermore, when it is taken into consideration that the latent infection might flare up at any time and give rise to serious outbreaks of the acute form, it is evident that the position regarding erysipelas infection deserves close attention; attempts to control the chronic form of infection are therefore desirable.

Recommendations for Control

The infection is most commonly transmitted by the ingestion of food or water contaminated with the organisms by the excretions of affected animals; but sometimes the organism gets into the system through skin wounds (castration) or the navel of the new-born animal. Control measures should, therefore, be adopted to check these avenues of infection. Such measures are:—

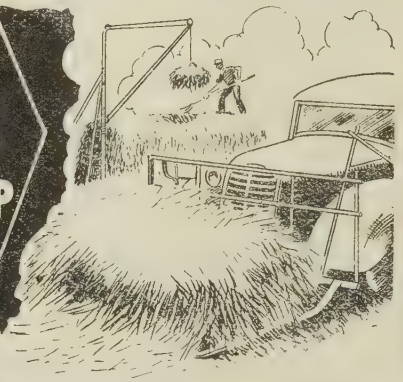
1. A strict system of sanitation should be followed and a high standard of hygienic conditions should be maintained on farms where erysipelas arthritis is known to be present. Particularly does this apply to farrowing quarters for sows. It matters not what system of pig-farming is followed, the rearing of litters must be confined to sanitary conditions which are reserved for this purpose only. The paddock system provides for a divisional fence that confines the sow and litter to half the paddock until the litter is three weeks old, being then transferred to the other half, where they are maintained until weaning. In this way each half of the farrowing paddock is spelled for at least six weeks before again being used. Where central farrowing quarters are used, it is necessary to see that the sties are washed down frequently and are reserved as farrowing units only.
2. The navels of the young pigs should be painted at birth with iodine-glycerine solution in order to reduce the possibility of umbilical infection.
3. Pigs should be transferred after weaning to new ground.
4. Every case of mortality in association with lameness in the same or in-contact pigs should be reported to the nearest Government veterinary officer, who will investigate the matter and advise accordingly.

Acknowledgements

The author wishes to acknowledge the most helpful co-operation from officers of the Livestock Division in securing material for examination and essential data for the investigation, especially Messrs. E. H. Stephens, M.R.C.V.S., Veterinarian, Stratford, J. Brydon Speedy, Supervising Meat Inspector, Longburn, J. A. Chenery, Supervising Meat Inspector, Waitara, and D. W. S. MacKenzie, Supervising Meat Inspector, Auckland. The photographs of the pig showing urticaria were kindly supplied by Mr. R. E. Alexander, M.R.C.V.S., from a case seen in 1938, and the photograph of the heart was made by Miss E. E. McKenzie, Animal Research Station, Wallaceville.

THE MORRISON SPECIAL AUTO LIFTING SWEEP

Its a fast worker!



This modern New Zealand-made harvester works fast, with less labour. Time saved is money earned—in war time or any time, so you can't afford to use uneconomic methods of harvesting.

The Morrison Special Auto Lifting Sweep has special spring steel teeth and is fitted with a lift to raise teeth off the ground. You can fit it to a car, truck or tractor. It's simple to operate and cheap to use.

Write now for details of its remarkable performance.

IT WILL MAKE MONEY AND SAVE LABOUR FOR YOU.

MacEwan Quality
Priced to fit your purse

MacEwans
LIMITED

MacEwans Machinery Ltd., Auckland and Hamilton. Agents at Galatea, Pukekohe, Te Aroha, Te Puke, Thames, Wairoa and Whangarei.
Messrs. J. B. MacEwan & Co. Ltd., Wellington, Palmerston North, Carterton, New Plymouth, Stratford, Hawera, Opunake, and Ohura.
Agents: Messrs. C. W. Parker & Co. Ltd., Blenheim.
Messrs. Reid & Gray Ltd., Dunedin, Balclutha, Gore and Invercargill.

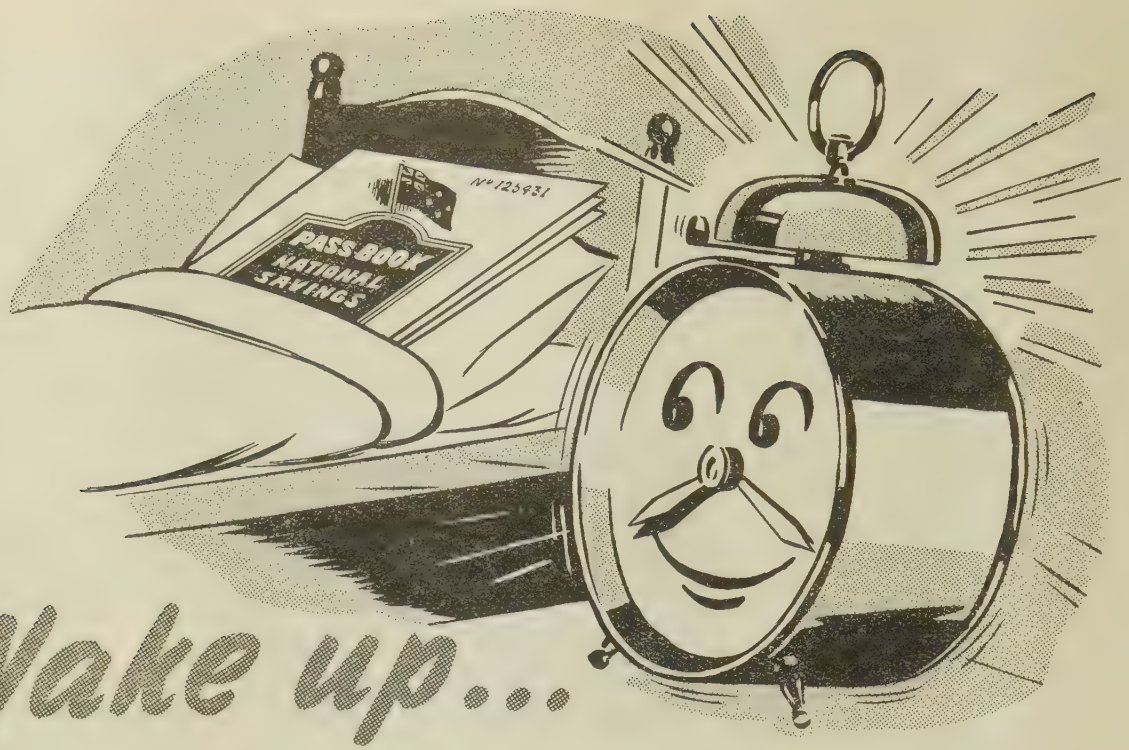
POST NOW

I am interested in the Morrison Special Auto Lifting Sweep. Send me by return full details and illustrated literature.

NAME .....

ADDRESS .....

..... J.A. 15/10/42



Wake up...

YOUR "**SLEEPING**" NATIONAL SAVINGS ACCOUNT

The "Reveille" is sounding for YOU—Spring into action now with your Pass-Book!

You have a war job to do—so join the advance guard. Put up a regular barrage of National Savings Deposits! It is your national duty to save—and lend.

NATIONAL SAVINGS DEPOSITS
are
State-Guaranteed
and will be
repaid on
30th June, 1945.

OTHER WAYS YOU CAN HELP

Buy 3% National Savings Bonds (maturing 5 years from date of issue).

Take your small change in Savings Stamps.

Join a National Savings Group where you work.

Invest during this and every week in

3% NATIONAL SAVINGS

Issued by the National Savings Committee, Wellington.

Progress in Marlborough

By

D. R. WILKIE,
Instructor in Agriculture,
Blenheim.

IN order to indicate what scope there is for subterranean clover in the district a brief discussion of the types of land to be found in Marlborough is necessary. This province may be divided roughly into three classes of land. Firstly we have the heavy land found in the lower reaches of the Wairau Valley and to a lesser extent at Seddon and Ward. Similar land may also be found at Kaikoura. As one proceeds up the valleys so does the land become lighter, but the best of it may be regarded as equal to any in New Zealand. The total area of this type is approximately 85,000 acres.

Further to the north-west and proceeding up the valleys, land of second class nature is encountered. Although this has been extensively cropped with wheat in the past, it is now too poor for that crop and barley-growing is the rule. Pastures are for the most part of poor quality, the limiting factors being absence of topdressing and a decided tendency to drought. These lands are admirably suited to subterranean clover as both practical experience and the recent soil survey have shown. This type of land is estimated to cover about 317,000 acres.

The third class of land is vast in extent and is used almost wholly for grazing purposes. Parts of this are of excellent quality and could carry high fertility grasses, while other areas are fit only for native associations. In this area, which covers 1,429,000 acres, subterranean clover has a place, but transport difficulties, the topography of the country and labour costs are problems which must be faced. Up to the present time little has been done with the clover on this vast area beyond the sowing down of small paddocks with a view to saving seed for future broadcasting. The bulk of these paddocks, particularly those in the Sounds district, have done excellently and the clover shows promise. On the other hand the second-class land has shown a great increase in areas sown to subterranean clover during the last few years, and many of the results have been encouraging. Stands have also been laid down in some cases on the heavy land, and the results were interesting.

Early History

When subterranean clover was first introduced into Marlborough is a matter for conjecture, but as far as can be ascertained the plant has been grown in parts of the province for over forty years. It has been reported from the hills near Tuamarina that there exists a stand over forty years old. At that time very few acres were sown, and it is apparent that the clover was not regarded with much favour, as these original paddocks did not spread to any extent during the next thirty-five years and it was only during the last decade that much headway began to be made.

Whether this was due to inertia, lack of appreciation of the plant or mismanagement is difficult to say, but it should be remembered that the clover was then introduced on excellent land where such plants as ryegrass, cocksfoot and red clover grew well, and the subterranean clover with its annual decline in the summer months perhaps was poor in comparison. Generally farmers did not hear of the plant at this time, and it was not tried on the poorer land until many years later.

Intermediate Phase

Thus it came about that the clover became concentrated in the hands of a few enthusiasts who appreciated its capabilities, and some of them even at this time managed to save seed. The demand for the seed was, however, most discouraging and harvesting costs were barely covered, the immediate result being that further areas were sown for grazing purposes on the few farms concerned.

Efforts were also made in some cases to eradicate the clover. Cropping with an utter disregard for the plant was carried out, and in one instance this was practised for four years, and when, in the fifth season, the clover came away as thick as ever in the stubble the potentialities of the plant were

NO
DARNING OR
HEEL BLISTERS
Socks worn with Gum Boots, Soldiers' Boots, etc., can last ten times as long!
"Please send me another pair. I have been wearing them now for nearly two years. They are certainly worth the 2/6 My wife says they are marvellous owing to no darning."—J W C., Milleton 8/1/42
2/6 Pair
Postage 3d.
"DOX" PAT. No. 84211
SOCK SAVER
Obtainable from all Leading Departmental and General Stores, or direct from
HAIRTONE PRODUCTS LTD.
461 KHYBER PASS, NEWMARKET
Box 71, NEWMARKET, AUCKLAND. Dept J.A.

Previously a danthonia sward, this land with the aid of subterranean clover is now highly productive.

The foreground shows poor pasture, while the introduction of subterranean clover has produced abundant feed in the balance of the paddock.

recognised. Experiences such as this were convincing, particularly as the area concerned was in a district of low rainfall.

It was at about this time that the use of the clover in Australia became known and widespread publicity was given it in New Zealand. In all districts in the country, areas of the plant were laid down and a large demand for the seed arose. The harvesting of existing areas in Marlborough was again undertaken, while many others were sown down. The immediate effect of a large flood of publicity might be likened to that of a gold rush when many injudicious things were done, and the case of subterranean clover was no exception; areas were sown down on land entirely unsuitable; others were grossly mismanaged, and in many cases dismal failure was the result, with discredit to the plant and its advocates.

Where, however, a little prudence was exercised excellent responses resulted, their value being enhanced by the dry conditions often experienced in Marlborough. Cases can be cited where by use of subterranean clover farms have been improved beyond recognition and the clover has shown itself of great value. Its supposed ability to crowd out grasses has been disproved by experience in Marlborough, and an interesting instance of its faculty for disappearing where better clovers are able to grow was demonstrated last season. A paddock sown with subterranean clover and ryegrass on medium land had a heavy strip at one end into which the drainage of the paddock was concentrated. Here the subterranean clover did not survive, but was replaced by white clover.

Experience in Marlborough has shown several points of value to the district. Early autumn sowing where possible is definitely advisable in order to ensure a good strike and the successful over-wintering of the plant. Further, it has been found that sowing pure except on the very worst land is not advisable.

YOUR National Savings Account
may mean a minor sacrifice - -
BUY 3% NATIONAL SAVINGS BONDS
BANK
BUT, you don't have to dodge bombs on the way to keep it going ! !
Inserted in the Interests of the Waterfront War Effort by
LEVIN & COMPANY, LIMITED
Cnr. FEATHERSTON AND BALLANCE STREETS, P.O. BOX 1496, WELLINGTON, C.1.
N.Z. AGENTS:
LISTER Shearing Machines and Engines
THE AGA COOKER

Progress in Districts

Marlborough Sounds: In the Marlborough Sounds attempts have been made to sow down paddocks on the better flats on subterranean clover, and these are now in their fourth to fifth year. Good growth has been experienced and it is hoped to take seed off these areas and sow down the poorer hill faces. The Sounds district offers favourable conditions for subterranean; frosts are not severe, the growing season is long and the rainfall adequate.

Departmental experiments where subterranean clover was broadcast on hill country with lime and super have shown excellent results, and it is considered that under the conditions, broadcasting on these hills should result in a fair "strike." Variety trials here point to Mount Barker seed being the most suitable present type.

Difficulties in the Sounds are the nature of the country, active competition from weeds and shrubs, lack of adequate transport and the high cost of manures. Extensive broadcasting on the hills without fencing and proper grazing management has led to failures.

Marlborough County: Here many good areas of subterranean are to be seen. It is to be found mostly on light shingly loam which previously carried danthonia and weeds and in some cases poor run-out pastures. The introduction of subterranean clover has revitalised a large number of these paddocks. Limiting factors are a tendency to drought and a lack of lime in the soil, but phosphate and lime are being applied with good results. Most of the seed harvested is in this area, and in future it is thought that more of this land will be sown in subterranean clover.

Awatere County: The clover has been tried both at Seddon and Ward on the lighter land. There are no large areas, and these paddocks may be regarded merely as experimental blocks, but in the last few seasons results have been worth while, and it is probable that further areas will be sown.

Kaikoura County: Several parts of this district offer scope for the growing of subterranean clover. Rainfall is higher than the northern end of Marlborough and conditions are quite suitable. No large areas have been sown as yet, but the plant has been tried fairly extensively.

Seed Production

Another feature of subterranean clover growing in Marlborough is that of seed production. In years past some good yields of seed have been obtained, and following the advent of certification there is room for expansion in this field. Several areas were accepted into certification last season, and the seed produced, judged by Australian standards, was of excellent quality. Other areas will possibly follow, and it is conceivable, should the demand for the seed remain, that subterranean clover may be harvested more extensively in Marlborough.

Lifting fingers attached to the mower bar.

Harvesting the Seed

In the first place the ordinary mower and hayrake was used, but this proved only moderately successful, it being found that only a very small proportion of the seed on the ground found its way into the bags. An improvement was effected by fitting special lifting fingers over the mower points, which fingers had the effect of raising the seed off the ground before the knife came along. This appliance practically doubled the yields obtained. Subsequent seasons showed, however, that there were defects in this method also.

It will be realised that in order to lift the seed from the ground a certain amount of strength must remain in the straw. When in a normal sense this obtained the method worked quite satisfactorily, but in dry conditions the straw merely broke, leaving the seed on the ground. In this case the hayrake had to be reverted to and the chain-drum stripper was also used. This latter method was inclined to include too much earth in the sample and could hardly be described as satisfactory.

Work is now being carried out on a method which might be described as a large vacuum cleaner. This will have a regulated blast capable of picking up the burrs without disturbing the soil particles. Experimental work on this method shows promise, and it is possible that it will be used in future.

Future Prospects

There seems little doubt subterranean clover will be an assistance in bringing back much of the second-grade country in Marlborough. It also has possibilities in this district from a seed point of view and this may be an avenue in which expansion will come. Judging by past experience some failures may be expected in certain seasons, but in general this clover in Marlborough has been successful and if the work started with this plant is continued subterranean clover will prove itself a valuable addition to the poorer pastures and much of the back country.

DELAYS *are* DANGEROUS
EFFECT That POLICY
with the
GOVERNMENT LIFE
TO-DAY

TYCOL
High Grade
MACHINE OIL
for
Electric Motors,
Sewing Machines
and all
Delicate Bearings
Refined by Veedol Refiners.
Sold in 4oz Bottles.
SIMMS JONES LIMITED
(Late W. H. Simms & Sons, Ltd.)
Christchurch, N.Z., Distributors

The Navy protects our shores . .

COOPER'S

protects your flocks against the ravages of WORMS!

Protect your flocks and your profits. COOPER'S WORM DRENCH (Carbon Tetrachloride) is highly efficient especially against the large stomach worm which causes anaemia. Efficient against Liver Fluke. Because it is highly concentrated it is exceptionally economical and easy to use.

Alternate dosing is recommended between COOPER'S N.C.A. (Nicotine, Copper-Sulphate), and COOPER'S WORM DRENCH. (Both Registered pursuant to Stock Remedies Act, 1934).

Cooper's N.C.A. now contains Cobalt.

Obtainable from Merchants and Stores.

COOPER, McDOUGALL & ROBERTSON
(N.Z.) LTD.
CUSTOMS STREET EAST, AUCKLAND, C.1.

NEW
PHENOTHIAZINE DRENCH
Limited quantities available at LOWEST PRICES. For particulars apply to above address.

CARBON TETRACHLORIDE

Cooper's WORM DRENCH

Dosing is often as important as dipping!

PRODUCTION OF WHITE CLOVER SEED IN NORTH CANTERBURY

White clover seed is in demand at highly profitable prices, and in North Canterbury is being successfully harvested by a number of farmers. The methods employed in harvesting this seed are described in this article.

A SEED crop of white clover is generally looked upon as a catch crop, and farmers are reluctant to estimate yields until the seed is in the bag. However, high prices ruling today for certified seed are a great inducement to plan carefully for the harvesting of this very payable crop.

A common practice in North Canterbury is to drill one bushel of certified perennial ryegrass seed with 3 to 4 pounds of certified pedigree white clover in the spring or early autumn, taking care that the seed bed is clean and firm and that the seed is not buried too deeply. A lighter seeding of white clover has frequently given satisfactory results, but experience has shown that a poor type of volunteer clover is usually largely suppressed by the heavier seeding.

By
E. G. SMITH,
Field Instructor,
Rangiora.

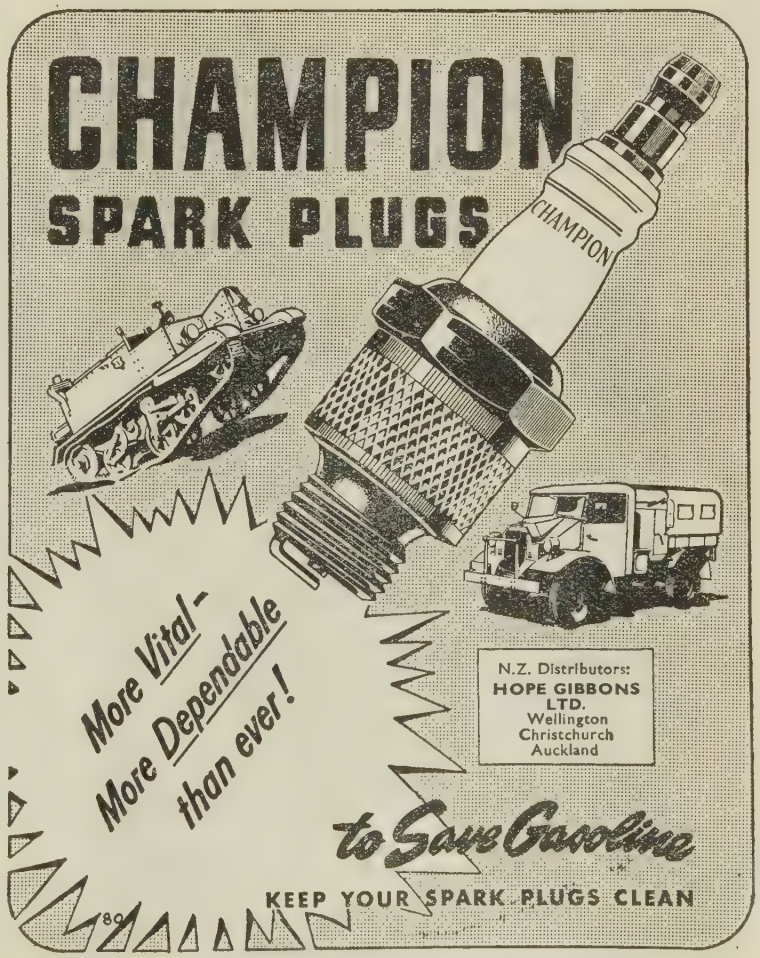
The broadcasting of grass and clover seed is not generally favoured in this district, as, although the seed bed may be in perfect condition at the time of sowing, a few days of north-west wind will dry the surface soil to such an extent that the germinating plants will frequently die off through lack of moisture.

Liming

In most parts of North Canterbury white clover will not thrive unless at least a ton of lime per acre is applied, preferably just before sowing, and many farmers now consider that they cannot afford to sow down without this dressing of lime. One bag of white clover seed pays for many tons of lime, and in many cases where a light dressing or no lime at all has been applied the clover plants are far from conspicuous. Even where the pasture is not intended for seed production, it is a recognised fact that a good pasture cannot be obtained without at least 30 per cent. of vigorous clover in the sward.

Time of Closing

The most common practice is to close the area for perennial ryegrass seed in the first year, topdress with five hundredweight of carbonate of lime



Distributors in Dunedin and Invercargill: EADIE BROS. LTD.

An inside divider fitted to the cutter bar will facilitate picking up.

The use of an inside divider reduces the width of the swath.

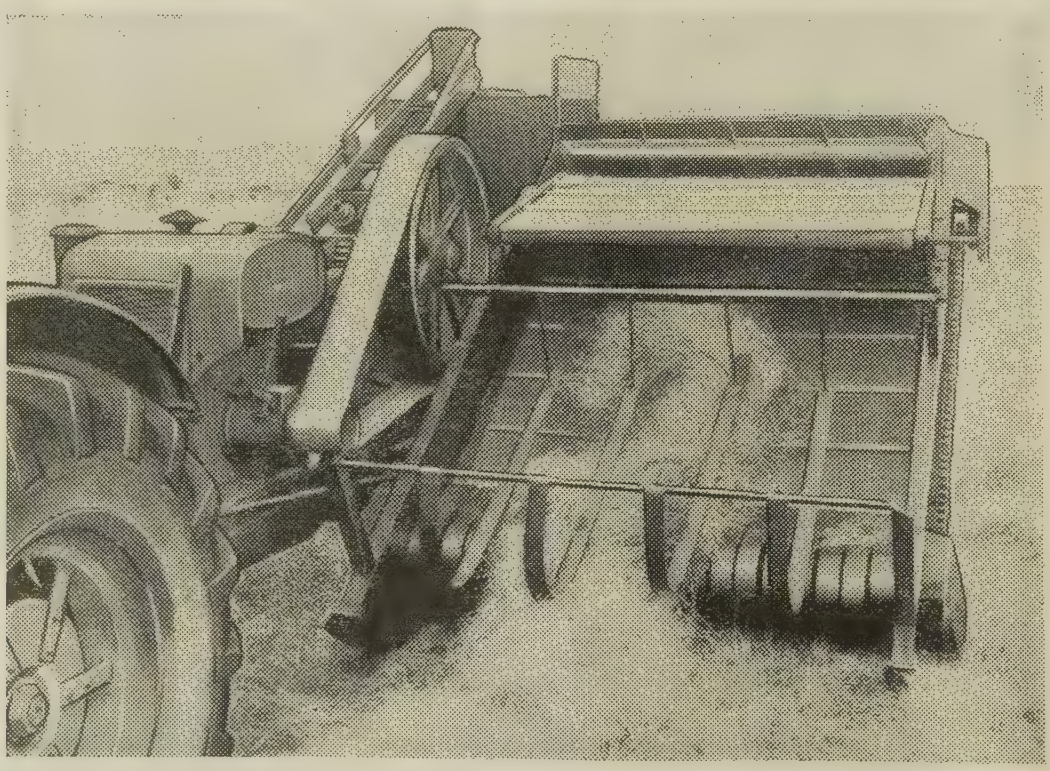
and one hundredweight of superphosphate in the autumn, and graze closely through to the spring to suppress grass growth, thus allowing the sward to become clover dominant.

If it is found impracticable to keep the paddock close grazed, it is advisable to top with the mower just before closing up. The time to close a paddock is governed largely by the soil type and climatic conditions, light land areas usually being closed in mid-October, while on the heavier land many fields are grazed till mid-December.

Cutting the Crop

Climatic conditions from the time the field is closed for seed will affect time of cutting, but under normal conditions the crop should be cut when 80 per cent. of the flowers have died and the stalks turned yellow.

An inside divider fitted to the mower leaves the swath in a narrow windrow and for this purpose an old car mudguard can be beaten into the required shape and is found to be most satisfactory. In the mowing of light crops it is wise to fit a catcher to the cutter bar and to have the material raked



The machine as illustrated above—**The New Holland "Automaton" Hay Press**—has given convincing evidence by practical demonstration that it will indeed "eliminate the worry of obtaining wire and workers." In the Manawatu, operated by a lad of 16, it baled 153 bales per hour and beat by 66.46% the comparative work of a competitive baler, operated by 4 men. In Canterbury, under ideal conditions, it clocked up 4½ bales per minute of lucerne, or the equivalent of 9 tons per hour; while a further demonstration produced 505 bales of poor light hay in 2 hours 10 minutes. The twine used is specially treated to withstand all weather and has outlasted black wire under similar conditions. Great interest has been evidenced on the part of Contractors and Estate Owners from North Auckland to Invercargill, and the mail has been busy with letters of enquiry with regard to prices and dates of delivery of future machines. Sole Australasian agents are: Doring Implement Supplies, P.O. Box 1179, Wellington.

from the catcher into rows by someone walking behind the mower.

If the crop is to be threshed by a clover huller the side delivery reaper is sometimes used, but it has not recently found favour, as in wet weather the material from the side delivery takes too long to dry.

NECADOK DOCKING FLUID is

ANTISEPTIC, HEALING AND ASTRINGENT

It checks bleeding and promotes healthy and rapid healing.

NECADOCK IS NOT WASHED OFF BY RAIN AND IS RECOMMENDED FOR ALL STOCK WOUNDS.

Available in 1-gallon, ½-gallon, ¼-gallon and pint tins.
(1 Gallon will dock 1000 lambs).

Agents in N.Z.: All Branches of the **Farmers' Co-op. Companies and Associations.** In Hawke's Bay obtainable from **Williams & Kettle Ltd.**

ASK YOUR MERCHANT TO OBTAIN FOR YOU.

In showery seasons second growth coming up through the rows may give considerable trouble as it retards drying and makes harvesting difficult. When this difficulty is experienced the mower knife should be run under the rows. This allows the crop to dry out quickly and although it may be found necessary to have a man walking behind the mower to clear blockages, this procedure will be found most effective.

Threshing

The methods of threshing vary with the crop and the season, but under favourable conditions picking up with the header harvester is the most popular, although light crops are frequently

Quality is not Rationed at the HB Store
RATIONING OF CLOTHING has inevitably created a demand for QUALITY CLOTHING. In other words, H.B. CLOTHING is now in greater demand. Despite present-day difficulties, Hallensteins maintain that quality which is renowned from Whangarei to Invercargill. Clothing Coupons go much further at the 29 H.B. Stores for the simple reason that . . . H.B. QUALITY IS NOT RATIONED.
HALLENSTEIN BROS. HB NEW ZEALAND
Hallensteins
(ADDRESS DETAILS.)

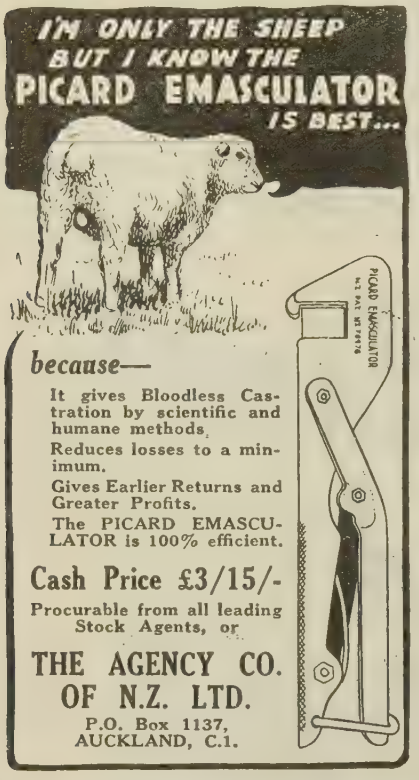
10942

direct headed, and occasionally stripped with the chain-drum stripper. Where it is found impracticable to allow the material to "condition" for threshing in the paddock the crop is stacked and later threshed with a clover huller.

If, when the crop is stacked, it is found that many seed heads have been left in the paddock due to excessive handling or wind damage, the chain-drum stripper may be run over the area and the material collected emptied on sheets and forked on to the stack.

Cutting of second growth to allow drying out of material in swath.

Two hundred pounds per acre is considered an average yield, and as the paddock is only closed from stock for three to four months, the growing of white clover for seed production must be considered a very payable proposition.


I'M ONLY THE SHEEP
BUT I KNOW THE
PICARD EMASCULATOR
IS BEST...
because—
It gives Bloodless Castration by scientific and humane methods.
Reduces losses to a minimum.
Gives Earlier Returns and Greater Profits.
The PICARD EMASCULATOR is 100% efficient.
Cash Price £3/15/-
Procurable from all leading Stock Agents, or
THE AGENCY CO. OF N.Z. LTD.
P.O. Box 1137, AUCKLAND, C.1.
PICARD EMASCULATOR

Answer to Correspondent

Waterproofing Sack Sheet

H.H. (MATAMATA):—

Would you kindly give me a good waterproofing for sacks?

FIELDS DIVISION:—

Ordinary sacks can be made waterproof by painting the stretched-out bagging with a mixture of two parts of boiled linseed oil and one part of raw linseed oil well mixed together. This should be well worked into the bagging, which should be hung in a dry, airy place until dry. Another light coat should be given if necessary.

Satisfactory results can also be obtained by spraying the sacks with tar and fat mixed together and applied as hot as possible.

SUBSCRIPTION RATES.

The *Journal* is issued monthly. The subscription within New Zealand, which is payable in advance and includes postage, is 2s. 6d. a year. The overseas subscription is 5s. Subscriptions should be forwarded or paid direct to any office of the Department of Agriculture in the Dominion. Single copies, price 6d., are available from the Department of Agriculture, Box 3004, Wellington.

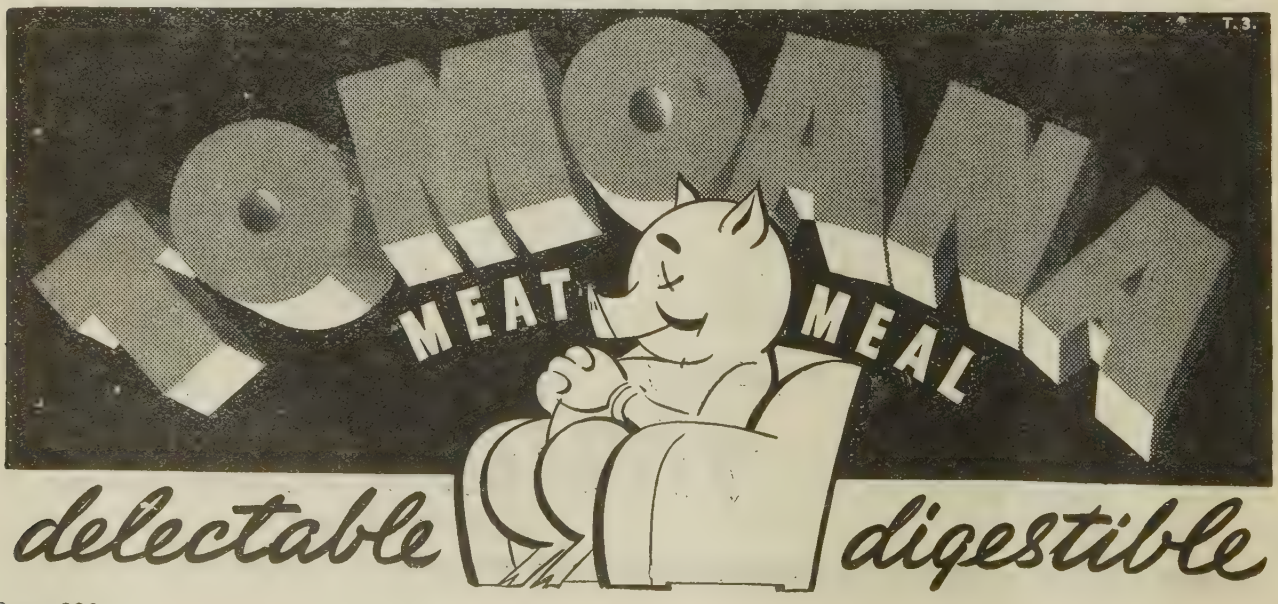
BORACURE is the guaranteed effective "home guard" against the deadly unseen enemy, Borer. BORACURE gives permanent immunity from Borer and Decay. It is inexpensive. It protects resale and mortgage values. It ensures the permanency of your property investments.

Have the trained BORACURE technical men inspect your home and buildings now. There is no charge for a report, but it may possibly be the means of saving you considerable loss through the ravages of Borer. Write or call for free booklet, from—

BORACURE (N.Z.) Ltd.

Head Office: Manchester Unity Bldgs., Lambton Quay, Wellington.

Branches and Agents throughout the Dominion



Mr. C. Walker, Instructor in Agriculture, Thames, asks

Should the Marine Flats on the Hauraki Plains Be Topdressed?

STRETCHING from Miranda in the west and to Thames in the east, there is a belt of uplifted marine silt extending inland from the Hauraki Gulf coast for several miles, where it is eventually merged into fresh water alluvial and peat formations.

This marine deposit is of extremely fine texture, is highly retentive of moisture even to the point of waterlogging, and bakes very hard under hot, dry conditions. In parts there is still ample evidence of its origin, especially in localities where extensive sea shell deposits have been discovered.

From an agricultural point of view the exceedingly fertile nature of this belt is of considerable interest. Few, if any, areas in the province can compare with this tract of country in this respect, and, when one takes into account its excellent climate, there can be little doubt that it would rank very highly in comparison with any other area for productive ability.

This contention is well supported by returns and statistics. On one farm a five-acre crop produced for sale 600 bushels of maize in addition to what was fed to poultry and pigs on the farm. Moreover, the country as a whole ranks fifth among New Zealand counties for stock concentration per 1000 acres. This latter point is all the more remarkable when it is realised that much of the country is yet only partly developed, while an appreciable proportion is still in the virgin state.

Production Of Fodder

So far as grassland farming is concerned, the Hauraki marine flats, by virtue of their high fertility, make the production of fodder relatively easy. Given a good seed bed, a grass mixture of good quality seed of the right species and favourable climatic conditions, no difficulty is encountered in the establishment of a good sward. I have mentioned "good quality seed of the right species" for two purposes, neither of which should be missed.

Left. — Typical marine silt country; kahikatea and cabbage tree bush in the background.

Below. — Excess summer growth due to understocking and poor subdivision.

Firstly, the success of a sowing depends upon the suitability of the species to the conditions and for the purpose for which they are designed. On much of the marine silt no difficulty will be encountered in establishing such grasses as the ryegrasses, cocksfoot, timothy, prairie, and paspalum. Owing to a certain degree of salinity and to winter waterlogging, however, white clover will not always flourish, and it is therefore advisable to sow at least 1lb of strawberry clover in all mixtures on such country. Clover growth is important to the pasture as a whole, and it is through strawberry clover alone that this can be obtained when conditions are against white clover.

The second important point after correct selection of species is that of ensuring that only the best strains of these species are employed. Where species come under a Government certifications scheme, certified strains should always be used, while other species necessary to complete a mixture should be purchased from a reputable seed firm.

Manuring May Seem Unnecessary

On the Hauraki marine flats there are many excellent pastures covering a considerable proportion of these soils. Ryegrass, cocksfoot, prairie, timothy, paspalum in parts, white clover, and strawberry clover all flourish, giving an abundance of pasture growth from spring to autumn. In fact, the high production of grass provides quite a problem to the farmers concerned, and it is little wonder that topdressing has never been seriously practised by many. Natural growth is so prolific, and control is so difficult, that manuring appears to be one of those things to avoid.

Another factor weighing against manuring is the necessity at present to remove most of the stock to drier country during the winter. Through their waterlogging tendency these

marine flats poach very badly in winter. Consequently, with the removal of stock there is no need to stimulate winter growth by manuring as would otherwise be necessary.

Inadequate Subdivision

One of these is the tendency to have farms inadequately subdivided. Control of flush growth can never be obtained by grazing in large fields or by spreading stock over many fields. On areas of this nature up to 20 cows per acre on a rotational system would give more satisfactory results while the country is dry enough to stand this concentration. It is true that there are times when fields of this size would be much too small, especially when the soil was soft, but there is no necessity to fence into small areas with permanent fencing. Rather would I suggest leaving the permanent fencing as it is and utilising electric fencing units to graze the smaller fields as conditions warranted such a course.

Another feature of farming on this country is the scant attention given to haymaking. Certainly, most of the stock are wintered off, but this should not prevent much larger supplies of hay being made, baled, and carted to the winter run-off. One of our greatest weaknesses in dairying is the winter feeding of our stock—a position, which, so far as this district is concerned, could be rectified at very little cost above that of harvesting.

These points, together with the natural unaided growth, have more or less influenced the farming community into rejecting the aid of fertilisers in promoting better pastures. Some have used a ton or two and claim that greater difficulty in control resulted. Was this a fault of the fertiliser, or could it be attributed to some defect in management? Were the fields too large, or was the growth too rank when stock were given access to the field? These queries demand satisfactory answers before we condemn the topdressing. Again, some have used fertilisers at irregular intervals, while others have spent money with the best of intentions but on manures not suited to the conditions under which they are working. Neither group could hope for success or satisfaction. No farmer has yet succeeded by underfeeding his stock, and few have milked successfully with beef breeds. Just as it is with stock, therefore, so it is with pastures. Treatment and judgment are important factors, neither of which may be ignored if success is to be won.

Left. — Stock grazing on rank feed. The clover-content is low, resulting in lost pasture vigour.

Below. — Reasonable summer control which gives better butterfat returns.

Losses Must Be Replaced

Quite a small minority of farmers regularly apply topdressing, and it is significant that these men are, without exception, all farming their areas successfully. I do not wish to infer that they are the only successful men, for that would be far from true, as many factors in addition to manuring make for success on this country. However, I believe that these men are on right lines, even if others are successful without manuring, and I believe, further, that the time will come when the majority of farmers on this area will be manuring, for fertility cannot remain so long as it is subject to constant drains on the supply. The growing of crops for sale, the growing of beef cattle, and the production annually of an average of over 300lb of butterfat per acre are all serious drains on natural fertility. Moreover, these result in deficiencies in the amounts of certain minerals in the soil.

As the years roll by without any effort being made to replace the losses, the cumulative effect of these reductions in mineral matter may seriously unbalance the true fertility of the soil, so that we reach a point where grass may grow freely but it may lack the necessary ingredients for good health in stock. While the example is not an exact parallel of Hauraki conditions, one might instance the excellent growth on the pumice country which was practically valueless until cobaltised superphosphate was used as a topdressing. Today, such growth, far from causing deficiency troubles, is sufficiently well balanced in minerals to promote excellent health in stock.

On the Hauraki marine silts this same problem may be more real than it now appears. No trouble may be experienced in the present generation but the continued neglect by farmers to replace some of the material removed must impoverish the soil to the extent upon which it is drawn.

Suggested Manures

In my opinion, when times return to normal I would suggest the use of 5 to 10cwt. of lime to 2 to 2½cwt. of a phosphatic manure in the first year, followed by 3cwt. of lime to 2 to 2½cwt. of phosphate annually thereafter. Referring to cobaltised superphosphate previously mentioned, it is significant that a few favourable reports concerning applications of this fertiliser have come to hand. These refer particularly to young stock and lambs which were not thriving before applications, but which subsequently improved a good deal. While no accurate data is available, it does appear that such a dressing may be worth trying where stock are not doing well.

Summarised, I feel that we should not be misguided by luxurious growth into a state of false security. Conditions may not always be so favourable—in fact, they cannot remain so without some compensation for what is removed from the soil. Consequently, in the interests of continued fertility and particularly in the interests of those generations of farmers to come, we have a duty to perform in maintaining by suitable topdressing the productive capacity of these soils by replacing some of the ingredients removed in the course of farming activities.

Rearing Orphan Animals

THE orphan animal is a frequent farm problem, and one where sufficient attention is necessary if satisfactory results are to be obtained. The natural food of any young mammal is the mother's milk and when this is replaced by what amounts to an artificial food due care must be taken to correct as far as possible deficiencies in that food. In all cases of orphans the foster mother is the ideal substitute, but generally this is not available and hand-rearing has to be undertaken. The calf presents no problem because it is immediately placed on its own natural foodstuff, but other animals necessarily have to be given a foreign milk diet.

Cow's milk is the natural choice and the table shown below indicates the variations in composition of other natural milks.

	% Water.	% Mineral Matter.	% Protein.	% Sugar.	% Fat.
Cow	87.2	0.7	3.5	4.9	3.7
Mare	89.0	0.6	2.7	6.2	1.6
Ewe	80.8	0.9	6.5	4.9	6.9
Sow	81.0	1.0	5.9	5.4	6.7

The differences in composition of the various milks reflect the different requirements of the young animals. The variations actually run a close parallel with early growth rate of the animal; thus, a young pig which doubles its birth weight in about a quarter of the time that a calf does, naturally requires a more concentrated diet than the calf. This is shown by the composition of the milk—the body building protein content of sow's milk is, for instance, almost double that of the protein of cow's milk.

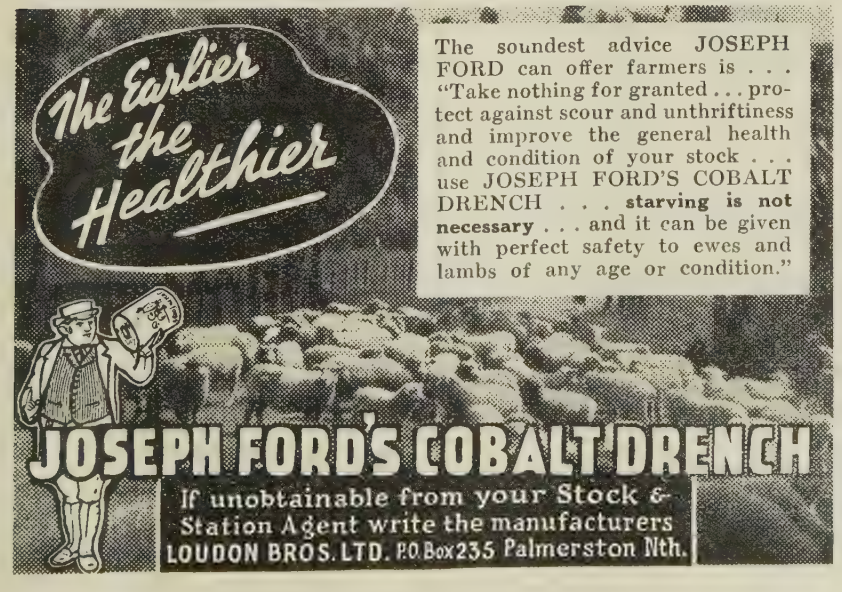
The Orphan Foal

Hand rearing the orphan foal is always a difficult job, both from the point of view of the often unsatisfactory results and the time and trouble involved. For the diet, cow's milk is naturally the principal food involved and as can be seen from the above table there are several marked differences in cow's milk and the natural food, mare's milk. The essential differences are that the protein and fat content of cow's milk are higher and the sugar content lower.

In the first place choose milk from a fresh cow, preferably tuberculin tested, and giving milk of low fat content and prepare the food as follows:—

1. Dissolve a tablespoonful of sugar in a little warm water (lactose or milk sugar is the best, and failing this glucose).
2. Add 3 or 4 tablespoonfuls of lime water.
3. Make up to one pint with fresh milk.

The food must always be warmed to blood heat before feeding and for the first few days give about a quarter of a pint (five fluid ounces) every hour. The handiest method is from a bottle with a large nipple. Whatever utensil is used for feeding should be thoroughly cleansed and scalded before using.


The Earlier the Healthier
The soundest advice JOSEPH FORD can offer farmers is . . . "Take nothing for granted . . . protect against scour and unthriftiness and improve the general health and condition of your stock . . . use JOSEPH FORD'S COBALT DRENCH . . . starving is not necessary . . . and it can be given with perfect safety to ewes and lambs of any age or condition."
JOSEPH FORD'S COBALT DRENCH
If unobtainable from your Stock & Station Agent write the manufacturers
LOUDON BROS. LTD. P.O. Box 235 Palmerston Nth.

Eveready
answers the call

"We want Eveready Batteries"—goes forth the order from the Army—likewise from the Air Force and the Navy. Huge supplies of Eveready Batteries are needed in the fighting forces—and they get them on time!

That's why sometimes you may be unable to procure Eveready Batteries just when you want them for your torch or radio. We are certain that you, like this Company, and your local retailer, realise that Defence *must* come first!

A National Carbon Company Product
ER/42/B24

EVEREADY
TRADE-MARK
TORCH and RADIO BATTERIES
Serving the Nation

As the foal grows the amount of milk may be gradually increased and the period between feedings lengthened. After about a week, six feeds a day will be sufficient and later only four. At three to four weeks the sugar can be stopped but it is wise to carry on with the lime water as this has a mild corrective effect on the bowels and gives needed mineral matter. After six weeks skim milk can be substituted for whole milk and after three months the foal can be given all it will drink three times a day. By this time the animal should have been taught to drink out of a bucket. The bowels should move freely but if scouring occurs at any time, give two or three tablespoonfuls of castor oil and stop the feeding of milk for two or three meals, giving only sweetened water and lime water.

At three to four weeks of age the foal will begin to nibble grass and a fresh, clean, well-limed pasture should be available; in addition at the earliest possible age, usually about two months, the foal should be fed a little solid food. Oatmeal, bran, and crushed oats are easily digested and should be given in small quantities. When the milk diet is finally given up it is wise to give a small quantity of cod liver oil in the feed.

The Orphan Lamb

The orphan or pet lamb is a common sight in sheep-raising districts and is relatively much easier to rear than the orphan foal. Nevertheless, to get the best results he requires careful attention during the early stages of his career. Ewe's milk being relatively higher in fat than cow's milk, the orphan lambs feed should be from milk rich in fat, even to the extent of adding a little cream and for the first few weeks the lamb should have milk from the same cow. For the first few days and nights the lamb should be fed only a small quantity of milk (about two or three tablespoonfuls) and it must be fed often. Careful attention to cleanliness of utensils is again necessary and the feeds should be given at blood heat. After two to three weeks of age, it is not necessary to feed more than three times a day.

The Orphan Pig

When hand-rearing young pigs the best results are obtained by feeding on sweet whole milk six to eight times daily during the first four weeks. It is best not to add anything to the milk in the way of sugar or cream, although in this respect a high testing cow should be used for the supply. A quart of milk per head daily is sufficient but suitable concentrates (meat meal, linseed meal, etc.) should be supplied as soon as the pigs can eat solid food so as to balance the lower protein value of the cow's milk. The first few days the milk should be at blood heat for feeding and until the piglets can be taught to drink from a trough a nursing bottle may be used to feed the orphans. Warm housing, clean bedding, and a plentiful supply of fresh water are essentials that must not be neglected.

—B. A. TAYLOR, B.V.Sc.,
Veterinarian, Dunedin.

Inflation Crack Doesn't Happen

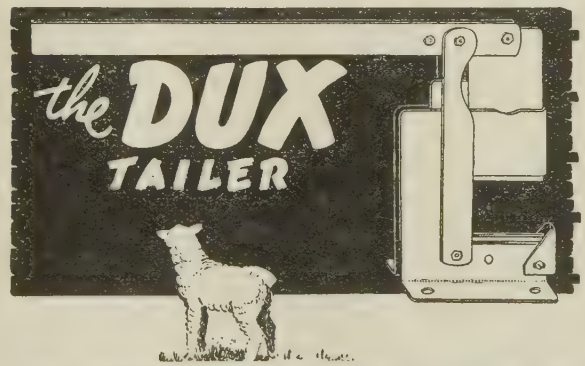
with a

It's the "flattening" of the inflation that causes crack, the bugbear of all inflation troubles. "Flattening" is impossible in a Nu-Me-Ta-Vac bail, and this fact gave one user six times the inflation life and more than paid for his Nu-Me-Ta-Vac in one season.

Users Say:

"I don't want my cows milked without it."
"The cows' teats are not left dry and hard."
"Eliminates slap on worn inflations."
"Cups hang on better."
"Milks my machine 100%."
"Milks faster and cleaner."
"Should be on every machine."

35/- ENQUIRIES TO: H. E. NAPIER LTD. Box 1555, WELLINGTON



EFFICIENT
EASY TO OPERATE
SPEEDY
HUMANE
REDUCES LAMB LOSSES

An instrument all practical Sheep Farmers require

TESTIMONIAL re DUX TAILER . . .
From R. G. Kennedy, Stratford.
"I found the Dux Tailer is efficient, and fast, and did a good job of tailing with practically no loss of blood. The tail heals quickly with a NICE ROUNDED END. The lambs after operation recover quickly. There is a right way to use the machine and instructions how to use must be carefully studied."

It is so simple and efficient that a boy can operate it. Literally hundreds of farmers testify to its efficiency and humane operation.

Lamb losses are practically nil.

Obtainable from all Leading Stock Agents throughout New Zealand, or direct from Price £3/5/-

The Sole Distributors:

THE AGENCY CO. OF N.Z. LTD.

P.O. Box 1137, AUCKLAND, C.1.

Use TWO Drenches for Maximum Protection against Worms

WHEN TO DRENCH LAMBS AND EWES

Always drench early. Drench lambs three or four weeks before weaning time and with the ewes again at weaning. Further drenching may be necessary if the flock is still infested.

Don't do half a drenching job by expecting one drenching to clear your sheep of worms for a whole season. Drench regularly and with heavy infestations use two drenches alternately—this gives double protection against all types of dangerous worm infestation—intestinal and tape worms as well as stomach, bloodsucking and liver fluke worms—and costs no more in the long run.

GIESENS—**For stomach, blood-sucking and Liver fluke worms. Requires no special preparation and is perfectly safe. Costs only ½d. to ¾d. per dose.**

SUTTONS—**(Nicotine and Bluestone with Cobalt added). For intestinal and tape worms. A popular and successful drench with a valuable cobalt content. Costs only ½d. to ¾d. per dose.**

IT ALWAYS PAYS TO DRENCH EARLY!

Some Symptoms of Worm Infestation

Loss of condition, swellings under the jaws, rough dry fleece, great thirst, scouring and pot belly are some symptoms of prolonged or severe infestation.

Drenching costs little . . . but it saves millions

Drenching costs only a fraction of a penny per sheep but its regular practice can save thousands of sheep annually. Even where worms do not kill the sheep, they adversely affect the quality of the wool and reduce the weight. Systematic drenching can save millions of pounds for N.Z. sheep-farmers.

HAVE YOU ANY PROBLEMS? **Premier Products specialise in the manufacture of sheep drenches. *Your* problems are *their* problems. Do not hesitate to write for any information you may need.**

TIME-TESTED DRENCHES

GIESEN'S & SUTTON'S

PREMIER PRODUCTS LTD. HUDDART PARKER BLDG. WELLINGTON

NEW ZEALAND MANUFACTURERS AND DISTRIBUTORS.

You can order or obtain supplies through any stock firm or merchant, but here are the names of our Agents, who carry supplies to fill your requirements. *Support them where possible.*

Kash Traders Ltd., *Ruatoria*. Alfred Buckland & Sons Ltd., *Auckland and Branches*. G. W. Vercoe & Co. Ltd., *Hamilton*. Hughes' Hardware Service Ltd., *Te Kuiti*. S. Christmas Ltd., *Taumarunui*. Newton King Ltd., *Ohura*. Farmers' Co-operative Org. Society of N.Z. Ltd., *all Branches, Taranaki*. J. D. Bell, *Gisborne*. Hawkes Bay Farmers' Co-op. Assn. Ltd., *all Branches, Hawkes Bay*. Levin & Co. Ltd., *all Branches*. W.F.C.A. Ltd., *all Branches, Wairarapa*. New Zealand Farmers' Co-op. Distributing Co. Ltd., *Marton*. Andrews & Beaven Ltd., *Christchurch, Ashburton, Timaru*. N.Z. Farmers' Co-op. Assn. Ltd., *Canterbury*. D. S. Bain, *Oamaru*. Donald Reid & Co. Ltd., *Dunedin and Branches*. Reid & Gray Ltd., *Gore, Invercargill*.

Answers to Correspondents

STIFFNESS IN PIGS.

"E.P.A.," HIKURANGI:—

I had trouble with my pigs last year. When about 80 lbs. in weight some of them got stiff in the hind quarters and seemed to be unable or unwilling to stand on the back legs to feed at trough. This month the trouble seems to have started again in a pig only five weeks old, which has been away from the mother only one week. The sows are all sound and healthy, and I lime and topdress regularly. There must be some mineral deficiency.

LIVESTOCK DIVISION:—

From the brief details given, one would surmise that the older pigs were suffering from arthritis, i.e., inflammation of the joints of the hind legs, but without further details, a definite opinion as to the cause cannot be given.

Arthritis may arise from various origins as

(a) Infections.
(b) Injuries.
(c) Mineral irregularities in food.
(d) Poisoning.

(a) In older pigs the commonest cause of arthritis is due to infection with various germs which probably enter the system through the mouth and nose, passing into the blood stream and becoming localised in the joints. This gives rise to pain, swelling, and heat in the joints. Depending upon the nature and severity of the infection, the course of the disease varies. Some animals recover in a few weeks' time, others have permanently enlarged joints, leading in many cases, to lameness with a "consequent" "wasting" of the muscles of the affected leg. In extreme cases, the infection is such that death ensues within a few days of the disease being contracted, although arthritis itself is not the direct cause of death.

In pig management, prevention of disease, rather than cure, is aimed at. Care should be taken in the sanitation of premises and protection of the pigs from draughts, wet, etc. Good feeding is essential. The pigs should have a balanced ration given in correct amount and it is to be remembered that over-feeding can give rise to trouble.

Suckling pigs also suffer from arthritis which, probably, is of the same nature as joint and navel ill in foals. Except in very mild cases they are not worth treating and are better destroyed.

(b) Arthritis due to injuries, is generally caused by bad housing conditions, over-crowding, etc., and the remedy is obvious.

(c) As most of our pigs in New Zealand receive plentiful supplies of milk,

arthritis, due to mineral deficiency, is not of frequent occurrence. The only mineral likely to be in rather short supply in a diet composed almost wholly of skim milk is calcium. This can be supplied by putting a small handful of ground limestone in the troughs about once a week.

(d) When new galvanised skim-milk pipe lines or tanks are installed, there is a possibility of zinc poisoning arising, the symptoms of which are unthriftiness and arthritis. Milk acids dissolve the zinc and, to prevent this absorption while at the same time keeping the line clean, it is an excellent practice to fill, or partially fill, the line with a solution of molasses and water after each milking.

Cow With Swollen Joint

"H.W.H." (MANUREWA):—

"I have a six-year-old Jersey cow who, previous to this trouble was in good health. About two months previous to calving, which has just taken place, she was limping on her right-hand back leg. A close-up examination could show no signs of injury and no apparent cause for the lameness. After putting her in the bail I found a lump about 2½ inches long by ¾ inch wide which seemed to contain fluid. The cow is not in a really good condition, although not thin. Can you diagnose the trouble?"

LIVESTOCK DIVISION:—

Cold water should be applied from a hose pipe in and around the affected joint for 10-15 minutes, several times daily until lameness disappears. If the swelling still persists, the application of tincture of iodine twice weekly should assist in its reduction.

The animal should be kept on a flat paddock and not driven through rough stone or brick surfaced gateways.

Rearing Young Kid on Cow's Milk

"G.P.C." (Hokianga):—

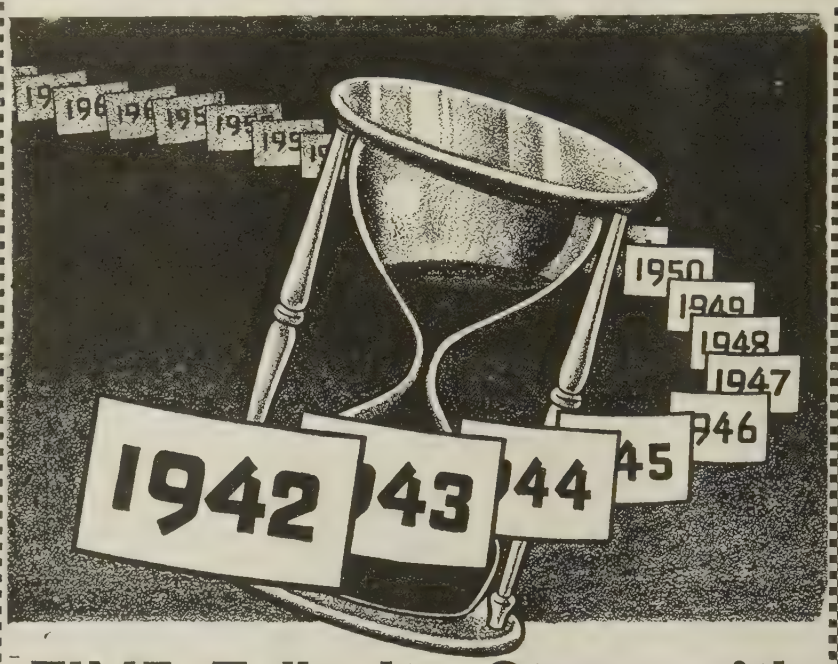
Can a baby kid be successfully reared on cow's milk from birth, or should it be left a few days with its mother. Will cow's milk require any adulteration with water or sugar? I understand that goat's milk is richer than that of cows.

LIVESTOCK DIVISION:—

In practice it is advisable to always give the first milk from the mother to the young. The first milk, or colostrum, has a laxative and special stimulating effect on the digestive tract of the young, and is necessary for this purpose. Whether the first milk is drawn off and fed to the young kid or whether the kid is allowed to suckle the mother for the first few days is a matter for consideration. After suckling for a few days it may be more difficult to get the kid to drink the milk from the container. This, however, is usually easy to overcome with a little patience.

Cow's milk will be found to be quite suitable for feeding. The milk of the goat has a high fat content, and may be compared to the rich milk produced by some of the dairy herds. The difference, however, is so slight that the richer strippings from a cow may be used and need have no addition of sugar or extra fat.

It is advisable to underfeed rather than overfeed, and if attention is paid to regularity in feeding, using clean feeding utensils, whether bottles or shallow pans, no difficulty should be experienced in rearing the young kid on cow's milk.



TIME Tells Its Story with
BETTER NON-ACID MANURES

Many soils of high-rainfall parts of New Zealand lack Lime, and contain large quantities of Iron and Allumina, which rob the farmer of about four-fifths of every ton of Water-Soluble Phosphates spread on these soils; a Basic Slag contains, among other minerals, large quantities of a non-acid chemical compound known as Calcium-Silico-Phosphate which, it is claimed, has the power of unlocking these dormant minerals from the soil. The phosphates of a Basic Slag cannot be locked up by these soils because they are already combined in a form easily digested by the root acids as they need them.

HESKETT SLAG

Made in New Zealand for New Zealand Soils.

Finely ground and packed 18 bags to the ton, it is delivered f.o.r. Huntly, Waikato. Obtainable from Merchants and Dairy Companies or from the Chief Distributors:

Arthur Yates & Co. Ltd.

Whangarei : AUCKLAND : New Plymouth

Farm Practice and Management

Concrete Replaces Mud Tracks

TARANAKI dairy farmers will readily welcome any suggestions to overcome the mud nuisance which becomes so prevalent during the late winter and early spring when the dairying season commences.

Natural grass approaches and farm lanes that lead to the cowshed, through stock trampling during continuous wet weather and poor drying conditions, become poached up and pugged, and after much usage present a veritable sea of mud. Stock roadways on the farm often become so bogged that it

Fig. 1—Newly constructed concrete stock track. Note close fencing on both sides, and the old raceway on the left.

is necessary to divert the stock therefrom through adjacent paddocks, where they are allowed to meander their way to the cowshed, with the result that extended areas of good pasture land become poached and much valuable pasturage is mutilated.

Fig. 2—An earlier constructed section of the same track after two years' use. In the background can be seen the new section, *Fig. 1*.

Loose Metal

The customary practice of metalling gateways, stock lanes and shed approaches by the carting of gravel during the off season provides only temporary relief and requires frequent renewal. The light porous soils (particularly in South Taranaki) readily absorb even coarse gravel and under stock tramping conditions during wet weather a seemingly sound gravel formation soon gives way to some depth of mud.

Carting of loose gravel therefore becomes an annual undertaking, involving much labour, proves costly, gives little service and does not overcome the mud nuisance. Furthermore, gravel is not available on many farms and requires to be carted from riverbeds or quarries some considerable distance away, making repeated re-metalling most expensive.

Imagine the saving in time, material and costs and the durability that would be created if, in the original formation, the gravel was sealed with concrete.

Concrete Tracks

In recent years the use of concrete on the farm has been extensively developed and in no sphere has its value been more loudly acclaimed that its use for stock tracks in mud elimination on dairy farms. The construc-

SPECIAL TEXT BOOK for RADIO BEGINNERS

Covering Ohm's Law, Magnetism and Induction, Electron Theory, Generation of A.C. Current, Resistances, Transformers and Condensers, and Elementary Radio Mathematics.

ONLY 10/- POST FREE.

DRULEIGH Radio College
12 O'CONNELL ST., AUCKLAND
Ronald W. Corson, Director.

"TAILED 1000 LAMBS
with practically
NO DEATHS,"
. . . says Mr. J. W. Dunn, of Waiwera South, 8/1/38.
"Tailed over 1700 lambs last season and they received
No Setback at all,"
. . . says Mr. Walter Clark, of Otara, R.D., 21/2/37.
"We tailed over 2300 lambs and are completely satisfied,"
say Messrs. Bowmar Bros., Bowden Fields, Gore, 2/2/38.
Entire satisfaction with the Baverstock Searing Iron is manifest in many such letters we have on file (inspection invited).

Most humane method—makes tailing safer, cleaner, than knife—just as quick.

Hundreds of users of this new method of tailing lambs with the
BAVERSTOCK SEARING IRON
have found it quickly pays for itself in greatly reduced losses from blood poisoning, and fewer, if any, rejects at the works. Get the facts. Send for **FREE** folder.

To Alex. Thompson & Son, Ltd.
453 Princes Street, Dunedin, C.1.
Please send me **FREE** folder on the Baverstock Searing Iron.
Name .....
Address .....
J.A.

tion of extended concrete tracks in replacing "races" for the servicing of farm paddocks is rapidly increasing, so also is the concreting of gateways and creek crossings. Wherever constructed the verdict has unquestionably been——an ideal job.

Concrete making is today common to all, and in every district practical advice thereon can be readily obtained, therefore reference need only be given to the type of concrete tracks to be constructed. The minimum width of a track should not be less than four feet, and the depth in concrete not less than three inches. A strong stock fence should be erected close to the concrete on each side of the track.

For herds of sixty cows or over the track may be widened proportionately. It is, however, inadvisable to have a track too wide, unless, of course, it is intended to be used as a roadway for vehicular traffic in feeding out, etc. Normally a depth of three inches of concrete (mixture six to one) will suffice; for vehicular traffic it should be strengthened.

Fig. 3—A concrete track constructed four years ago. Note a well trimmed boxthorn fence on right and post and wire fence on left.

Concrete stock roadways need not be completed in one season. They may be done in sections by commencing at the cowshed and gradually extending to the back of the farm, this taking perhaps several season to complete. In this manner labour costs are spread out and the work done as time permits.

Complete concrete stock tracks are in evidence on many Taranaki farms and give entire satisfaction. Boggy raceways are eliminated and the poaching of much valuable pasture has been saved and what is more the initial cost is a permanent one.

—J. E. DAVIES, Instructor in Agriculture, Hawera.

WHITE & BLOOD SCOURS

We stock and recommend

"MAX" Calf Scour Remedy.

8 oz. 7/6—plus postage 1/4
16 oz. 12/6—plus postage 1/4
36 oz. 21/——plus postage 1/11

Distributors.

WRIGHT, STEPHENSON & CO. Ltd.
AUCKLAND and BRANCHES.

CAMFOSA TEAT SALVE

1/9 - 3/- - 5/6 Everywhere

Will not taint the Milk

—Made from Lanoline

Bloat

HAS COST THE FARMER £250,000 A YEAR

● **CAUSES**—Sudden change of food, eating wet clover oats, lucerne, etc.

● **SYMPTOMS**—Stomach enlarged, especially on the left flank; cow is distressed and breathing is rapid, reels when walking. If relief is not given at once, animal dies.

● **TREATMENT**—Administer half-pint "ETHODYNE." If abdomen still badly inflated within twenty minutes, repeat the dose. Give a "RED DRAUGHT" when cow is again normal.

OSMOND & Sons N.Z. LTD.
P.O. BOX 460 WELLINGTON

EARLY CULTIVATION PAYS

IN northern districts in particular, where pastures are regarded as the mainstay for production, little attention has been paid in the past to supplementary cropping. When fertilisers were in ample supply the general inclination was to become more liberal in their application to grassland rather than to turn to cropping as a means of increasing production.

Undoubtedly the responses from this type of farm activity were highly gratifying to the farmers concerned. They saw in these applications a comparatively easy way of considerably raising the farm income. No cultivation was involved, no implements associated with cultivation were required from time to time, there was no danger from pests and diseases, nor was there risk of failure from any one of the other causes of crop failure.

Cropping, therefore, became quite unpopular with those who could exploit grassland farming to the fullest extent. In fact, a generation that knew little of cropping procedure was rapidly superseding the older school that developed most of the land with the help of farm crops.

War and its consequences, however, have intervened. Fertiliser is no longer freely available to all who desire it. The day of six hundredweight dressings and more per acre has passed for at least the duration of the war Pasture production, as a consequence, is shrinking; so farmers will again have to adjust their practices to include cropping in order to maintain production.

One of the chief handicaps to good cropping is poor initial cultivation. Examples are not infrequent of areas being ploughed a week before required, rapidly disced and harrowed, and then sown on what cannot be other than a poorly-prepared seed bed. A good seed bed cannot be prepared in so hurried a manner. Ploughing for any crop should take place at least two months in advance of sowing. If the area can be left in the furrow for a month it will benefit appreciably, after which it can be rolled on the furrow, thoroughly disced and then harrowed. It should be again rolled before seed is sown.

Discing is very important in breaking down the furrow and getting good tilth, after which harrows will level the surface. Rolling is equally important to give that firmness in the seed bed which will assure good germination.

Thorough preparation before sowing is of much greater importance than after cultivation. By this I do not mean that later cultivation is unnecessary, but I would stress that it is much more than half the battle in getting good crops if the initial work is carried out thoroughly. It may mean the difference between 20 tons and 80 tons in a mangold crop, 15 tons and 50 tons in a green maize crop, or 30 bushels and 80 bushels in a maize crop for grain. Surely these differences are great enough, and they are genuine too —to emphasise the importance of making a thorough job of that early work on the cropping area.

Most troubles associated with poor cultivation can be traced to attempting to crop too large an area. This is a mistake, as half the area given the same time in preparation will usually return more per acre, often more than double, than larger areas that are poorly prepared.

—C. WALKER, Instructor in Agriculture, Thames.

SUBSCRIPTION RATES.

The *Journal* is issued monthly. The subscription within New Zealand, which is payable in advance and includes postage, is 2s. 6d. a year. The overseas subscription is 5s. Subscriptions should be forwarded or paid direct to any office of the Department of Agriculture in the Dominion. Single copies, price 6d., are available from the Department of Agriculture. Box 3004, Wellington.

A TAXATION SERVICE with INDIVIDUAL and PERSONAL ATTENTION

Annual subscription only 30/- (Payable in advance).

And that is only one of the many advantages R. B. Swann & Co. offer. Here are some others:—

1. Preparation of your Income Tax, Social Security Tax and Land Tax Returns.
2. Copies of all Tax Returns are supplied to the client.
3. Free advice throughout the year on Taxation and Legal Problems.
4. Attention, without further charge to all inquiries from the Commissioner of Taxes.
5. Free advice on matters connected with the Excess Profits Tax.
6. We supply all subscribers with our specially prepared Farm Account Book (free of charge).

DOUBLE ENTRY SERVICE.—Farmers may now take advantage of the full Double Entry System of Book-keeping. We have established a special Department at all branches and Head Office, to keep full sets of Books under Double Entry, and the annual subscription is very reasonable indeed. Write or call.

Every subscriber receives personal and individual attention.

R. B. SWANN & CO.
Taxation Specialists
PHONE 48-780
HEAD OFFICE: SHORT'S BLDGS. 154 QUEEN STREET, AUCKLAND
Phone 48-780.

Hamilton Branch: Elswick Chambers, Victoria St. Phone 4628. P.O. Box 350.
Whangarei Branch: 88 Cameron St. Phone 3007. P.O. Box 139.
Dargaville Branch. Hoskings Buildings, Victoria St. Phone 459.
Morrinsville Branch: Studholme St. Phone 126.
Managers Farmers' Taxation Service, with over 10,000 subscribers in Auckland Province.

Railway Wagons and Tarpaulins

Help Them Do Full Duty

Faster production means faster transport. In the country's all-out war effort the strain upon our national transport system becomes greater and greater. Every loaded wagon standing idle—every consignment lying unclaimed in goods sheds—means inconvenience or delay, somewhere.

The Railways are life-lines between farms, factories and our fighting forces. There must be no delay. Quick release of wagons and careful handling of tarpaulins are ways of showing that you're not indifferent to YOUR responsibility.

A Delayed Wagon Retards Our War Effort.

Slaughterings of Stock

THE following returns of slaughterings of stock at meat-export slaughterhouses and abattoirs for the months of May to August, 1942, have been compiled by the Livestock Division:—

District	Cattle	Calves	Sheep	Of which Ewes were	Lambs	Pigs
North Island.						
Meat-export Slaughterhouses—						
Auckland	102,206	350,337	36,715	19,901	122,195	47,067
Poverty Bay Hawkes Bay	28,806	28,983	53,212	33,669	134,138	6,259
Taranaki-Manawatu ..	53,282	118,204	16,320	12,189	131,366	30,143
Wairarapa-Wellington ..	22,515	9,441	26,028	12,901	112,665	5,436
Totals	206,809	506,965	132,275	78,660	500,364	88,905
Abattoirs	45,309	13,545	198,656	88,375	22,642	38,390
North Island Totals ..	252,118	520,510	330,931	167,035	523,006	127,295
South Island.						
Meat-export Slaughterhouses—						
Nelson-Marlborough ..	1,268	2,951	7,516	5,239	38,852	2,029
Canterbury	5,007	9,034	89,549	66,417	291,526	8,429
Otago-Southland	7,361	1,409	60,217	48,767	515,943	2,054
Totals	13,706	13,394	157,282	120,423	846,321	12,512
Abattoirs	44,086	9,764	194,478	99,562	24,227	40,394
South Island Totals ..	57,792	23,158	351,760	219,985	870,548	52,906
Dominion.						
Meat expt. Slaughterhouses	220,515	520,359	289,557	199,083	1,346,685	101,417
Abattoirs	89,395	23,309	393,134	187,937	46,869	78,784
Grand Totals	309,910	543,668	682,691	387,020	1,393,554	180 201
Same Period, 1941— Meat-export Slaughterhouses and Abattoirs ..	231,102	552,777	675,336	424,318	1,585,466	186,468
Same Period, 1940— Meat-export Slaughterhouses and Abattoirs ..	283,857	536,480	944,108	605,275	1,439,235	176,687

Slaughterings of Pigs

The 13,480 pigs slaughtered at meat-export slaughterhouses and abattoirs during the month of August, 1942, were distributed in weight ranges approximately as follows:—

Up to 60 lb.	165
60-120 lb.	8,202
121-160 lb.	2,641
161-180 lb.	557
Over 180 lb.	306
Sundries	1,609

The grading of porkers is 82 per cent. of 1st quality and 18 per cent. of 2nd quality; and that of baconers is 73 per cent. of Prime 1's, 22 per cent. of Prime 2's, and 5 per cent. of second quality.

In the different weight ranges of baconers, the grading is as follows:—

121-160 lb.	74%, 21%, 5% of P1's, P2's and 2nds.
160 180lb.	66%, 27%, 7% of P1's, P2's and 2nds.

Radio Broadcasts

RADIO talks to farmers will be given from station 1YA, Auckland, at 7.15 p.m. on the following dates:—

October 26.—"Young Farmers' Clubs' Session" — Mr. E. B. Glanville, Provincial Secretary, Auckland Y.F.C. Council.

November 2.—"Seasonal Notes"—Fields Division.

November 9.—"Recognition and Control of Fruit Tree Pests"—Mr. A. T. Douglas, Orchard Instructor, Department of Agriculture, Auckland.

November 16.—"Some Notes on the Present Farming Position"—Mr. J. M. Smith, Fields Superintendent, Department of Agriculture, Auckland.

The talk on 16th November completes the series of broadcast talks to farmers for the 1942 season.

Pig Industry Broadcasts

UNDER the auspices of the District Pig Councils concerned broadcasts will be delivered in November as follows:—

1YA, Auckland, November 19, 7.15 p.m.—"Common Ailments," by H. E. Clark, Supervisor, Auckland District Pig Council.

2YH, Napier, November 12, 7.30 p.m.—"Breeding Programme or Fitting Pigs to the Feed Supply," by I. W. Owtram, Supervisor, Tairawhiti District Pig Council.

2YA, Wellington, November 10, 7.30 p.m. — "Answers to Questions," by C. H. M. Sorensen, Supervisor, Taranaki District Pig Council.

3YA, Christchurch, November 19, 7.15 p.m.—"Pig Clubs and District Pig Councils," by Hector McIntosh, Supervisor, Canterbury District Pig Council.

For Over 35 Years

THE GOVERNMENT

STATE FIRE

INSURANCE OFFICE

Has led the way in . . .

Reduction of Premiums
Concessions to Policy holders
Rebates to Fire Policy holders

Reductions in Rates and Premiums brought about by the STATE FIRE OFFICE have saved the insured public over £18,500,000

Support Your Own Office

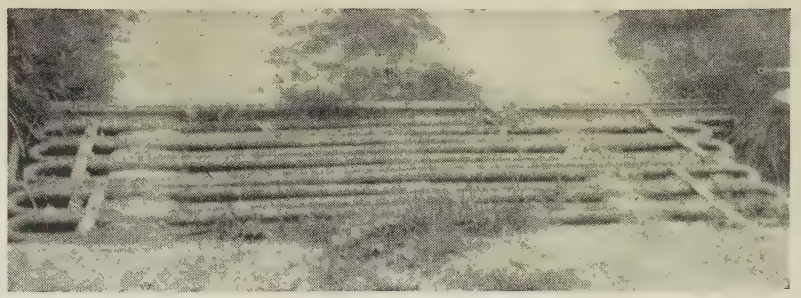
An Inexpensive and Efficient Cattle-stop

THE irksome inconvenience involved in having to stop twice when driving a vehicle through a gate is common experience, and when the gate forms the main entrance from a public road, the irritating nuisance may confront the farmer many times a day.

Considering that the front gate represents a constantly recurring nuisance—and one which is apt to be particularly emphasised in wet weather—the wonder is that even more farmers do not solve the problem by installing a "cattle-stop." Admitting that the orthodox "stop" can be fairly expensive, the experience of a Northland farmer, Mr. E. Ford, of Maungaturoto, clearly shows that it is possible to combine economy with a high degree of efficiency.

As shown in the illustration, the "cattle-stop" has been made from part of an old freezer coil, bought from a factory for 5s. It has now been in use for about fifteen years, and has carried loads of seven tons with safety. Although the pit is comparatively shallow and the grid is only a few feet wide, it is very rarely indeed that stock have ever been known to trespass.

—P. S. SYME, Instructor in Agriculture, Warkworth.



Part of a discarded freezer coil, bought for five shillings, which serves as an entrance gate to Mr. Ford's property.

MAKE MONEY

DESIGNING DISPLAY CARDS, POSTERS, TICKETS. ILLUSTRATING and CARTOONING.
Earn 5/- to 10/- hour. Write for Free Illustrated Booklet—
The Manager, McKAY'S STUDIOS, P.O. Box 367, Wanganui.

Increase your coverage by ordering . . .

YOU CAN'T BEAT IT

BECAUSE—

1. It has given unqualified satisfaction.
2. Contains Lime, Manganese, Iron Oxide, and traces of Cobalt, Zinc, Copper and Nickel.
3. It is easy to distribute either by hand or through a topdresser, as it is first ground to 80 per cent. fineness, and then granulated.
4. Minimum analysis 19 per cent. phosphoric acid.
5. Price £5/4/- per ton free on rail Otahuhu.

Challenge COMPOUNDED SLAG 19-21%

1 ton 4 cwt. can be purchased in place of every ton of super allowed under the rationing regulations.

YOU CAN'T BEAT IT EITHER FOR PRICE OR QUALITY.

Procurable from all North Island Merchants and Dairy Companies.

An Exclusive Product of CHALLENGE PHOSPHATE CO. LTD., AUCKLAND

WE'RE DOING OUR BEST

TO HELP AGRICULTURE DO ITS BEST

with

K·P. AGD T.M.

HIGH-GRADE FERTILISERS

MADE IN N.Z. TO SUIT ALL N.Z. SOIL NEEDS!

- The real answer to increasing the vital productive power of your land for WOOL, MEAT, and DAIRY PRODUCE.
- Every bag of K.P. FERTILIZERS brings you the double benefit of minimum outlay and maximum returns, both in quality and quantity, from crops and pastures.

Manufactured under strict scientific control at completely up-to-date Chemical Works at

AUCKLAND——
WANGANUI——
CHRISTCHURCH——
DUNEDIN——

by

KEMPTHORNE, PROSSER & CO.'S NEW ZEALAND DRUG CO. LTD.

In the Orchard and Vineyard

Orchard Notes

Maintaining Soil Fertility

THE quantity of plant foods absorbed from the soil by the growing trees and crop is usually greater than the amount converted into an available state by natural processes in the same time. To maintain production soil fertility must not be permitted to become depleted. Factors affecting soil fertility are:—water, air, soil warmth, depth of soil, organic matter, bacterial activity, supply of plant nutrients, soil acidity.

Water

The consumption of water by fruit trees is much greater than the amounts they contain. A constant stream is passing from the roots to the leaves where it is evaporated or transferred. This stream is associated with the cooling of the plant in hot weather and maintenance of turgidity of the leaf. It is in itself a food material, as well as a vehicle for the transport of food and food materials needed for the nutrition of the growing organs. In the soil it also acts as a soil solution containing the soil solutes and plant nutrients.

Air

The importance of air in the soil will be understood when it is recalled that the process of respiration goes on in every part of the plant, including the roots. Deficient root aeration may bring on disease.

Soil Warmth

Soil warmth is necessary for early growth. A soil that is cold in spring delays root activity. Soil warmth is also necessary for satisfactory bacterial activity.

Depth of Soil

The deeper the soil the greater chance the roots have of obtaining maximum food and water supplies, and of resisting drought conditions.

Organic Matter

Organic matter is the distinguishing feature of soils. Its presence increases the biological activities of the soil by providing food and energy for the soil bacteria. It increases the water holding capacity of the soil and its power of retaining dissolved food substances. It also improves the mechanical condition of soils, and their drainage, aeration, and warmth.

Bacterial Activity

The action of certain soil bacteria is to cause putrefaction and decay of the organic matter, with the subsequent production of ammonia. This ammonia and also that added in manures is quickly changed by what are termed nitrifying bacteria into nitrites and again into nitrates, in which form it can be assimilated by plants. The importance of the change must be strongly emphasised, for upon it depends the supply of nitrogen to the tree and under many circumstances the amount of growth is proportionate to the amount of nitrogen available.

Supply of Plant Nutrients

All of the following elements appear to be more or less essential to plant life: carbon, hydrogen, oxygen, nitrogen, phosphorus, potassium, calcium, magnesium, iron, and sulphur. The availability of others such as sodium, boron, zinc, manganese, silicon, copper, aluminium, and chlorine may, if sufficiently low, exercise a detrimental effect upon satisfactory production. Of the ten elements which appear essential to plant growth, carbon, hydrogen, and oxygen are obtained by the plant from air and water. Of the plant nutrients in the soil only nitrogen, phosphorus, potassium, and calcium are in general short supply in New Zealand soils and replenishment has to be made, usually in the form of manures.

Nitrogen starvation is characterised by (a) stunted growth; (b) yellowish green or reddish green colour general all over the leaf; (c) on fruit trees the leaves shed early and the lateral buds are inclined to be weak. Additions of nitrogen cause improvements in leaf colour and rate of plant growth. If in excess supply the results are soft, sappy wood growth, and fruit lacking in colour and keeping quality.

Good News

— BRAN —

Supplies are Easier.

STOCK MEAL AND BARLEY MEAL

Stocks are Good.

WHEAT, MAIZE, BARLEY, GROUND OATS, CHICK FEED, Etc., are in good supply, but unfortunately **POTATOES** are off for a while yet. We hope to supply orders again when new season's or imported potatoes become available. Meantime, keep sending us your enquiries for any of the above lines; also for **ONIONS, VEGETABLES, Etc.**

A. M. DOULL & CO.

60 HOBSON STREET - - - AUCKLAND, C.1.

P.O. Box 1778. Phone 41-735.

It is somewhat difficult to readily detect phosphate starvation. The leaves tend to become bronze coloured and faulty fruit bud development is ofen an associate result.

Potash deficiency may be indicated by dull coloured leaves, dying at the tips and edges and loss of condition. Fruit may be dull, soft, and lack keeping qualities.

A deficiency of calcium leads to (a) stunting and discolouration of the root and leaf, and (b) brown spotting and subsequent death of leaves.

Soil Acidity

The majority of cultivated plants tolerate a fair amount of soil acidity. However, the presence of acid in the soil will check nitrification and is also a source of denitrification and consequent loss of nitrogen.

—R. G. I. HAMILTON, District Supervisor, Horticulture Division, Auckland.

Current Work

At this period of the year the orchardist is primarily concerned with obtaining adequate spray coverage and with maintaining satisfactory cultivation. During spring and summer leaf growth is rapid and the increasing density of leafage renders complete spray coverage more and more difficult of attainment, and only by exercising care and skill can maximum results be achieved with the minimum waste of materials. Cover sprays are applied as a means of protection against disease attack, but are ineffective if the trees and fruit are imperfectly covered, or if the period between sprays is of such duration that new growth has eventuated which is uncovered by spray. Therefore thoroughness of application and timing of sprays are of vital importance to the orchardist in his war against pests and diseases. Cultivation should be well maintained to secure early aeration of the soil, and later to assist moisture conservation.

Citrus Notes

Plant Nutrition.

(Continued)

Calcium

Chemical symbol: Ca.

Occurrence in Nature: Calcium does not occur as the free element but combined as limestone, formed by the weathering of calcareous rocks which are mostly of organic origin, being the remains of tiny animals. Limestone is calcium carbonate. Calcium also occurs as gypsum (calcium sulphate), fluospar, and phosphate.

Function: Calcium neutralises poisonous effects of certain acids in the plant, e.g. oxalic is converted into calcium oxalate. It is connected with the building up of certain plant proteins and in the cell walls. Without it plants cannot use nitrate.

Method of Absorption by the Plant: From the soil in solution but independently of water.

Recommendations: The indirect effect of calcium is very important. Humus can only exert its maximum effect if adequate lime is present. Humus rich in lime is known as mild humus and promotes the development of desirable crumb structure. It corrects the over looseness of sandy soils and makes heavy clay soils more friable. Humus

1860 1942

SOW THE SEEDS OF SUCCESS
COOPER'S SEEDS
REG. TRADE MARK
ESTAB 1860

SOWING, SELECTING AND SELLING PEDIGREE SEEDS

Has been Our Business and Our Hobby for over Eighty Years.

NOW MORE THAN EVER BEFORE NEW ZEALAND MUST DEPEND ON HER OWN RESOURCES FOR SUPPLIES OF AGRICULTURAL SEEDS.

COOPER'S PRIZEWINNER ROOT SEEDS

IN BULK AND IN PACKETS, ARE BRED TO A STANDARD . . . NOT TO A PRICE!

We have been growing all types of Farm and Vegetable Seeds for several decades. Our Seed is harvested from crops rogued and grown under our own personal supervision, from our own special mother seed bred and reselected over a number of years.

Seed Growing is Our Business. Play safe, order your requirements for 1943 now.

AGENTS THROUGHOUT THE DOMINION.

F. COOPER LTD. SEED GROWERS 109-115 Dixon Street, Wellington

LET QUALITY BE YOUR ONLY GUIDE.

Remember, Cooper's Prizewinner Root Seeds take more Prizes in N.Z. than all other brands of seeds put together.

is the seat of the chemical and biological activity of the soil. An original dressing of 10 cwt. calcium carbonate per acre is advisable and an annual dressing of 2 cwt. is essential. Calcium is also applied as a by-produce in basic slag which contains 38% to 59% calcium oxide.

Nitrogen

Chemical Symbol: N.

Occurrence in Nature: Nitrogen comprises four-fifths of atmospheric air. It occurs as soda nitre or Chile saltpetre, i.e., sodium nitrate in the rainless zone of western South America. It also occurs as nitre or saltpetre (potassium nitrate), combined with hydrogen as ammonia NH_3 or as ammonium salts NH_4 and in animal and vegetable proteins, etc.

Function: Nitrogen is a constant and essential constituent of all living organisms being a basis of protoplasm. All life seems to depend upon the transformation of proteid compounds. Nitrates and carbohydrates are converted into proteins which are compounds of carbon, hydrogen, oxygen, nitrogen, and often sulphur and phosphorous. The proteins are synthesised mainly in the leaves. Nitrogen increases the growth of leaf and stem. An excess delays ripening and increases the liability to disease.

Method of Absorption by the Plant: Nitrogen is not absorbed directly from the air, but by the roots in the form of salts, chiefly nitrates, and to a lesser extent as ammonium or other complex organic nitrogen compounds. Leguminous plants through a bacterium, *Bacillus radicicola,* in the root nodules have the power of fixing atmospheric nitrogen which becomes available to the tree on decay of the legume. Atmospheric nitrogen is also fixed in the soil by fixing bacteria—*Azotobacter* and *Clos tridium.* Nitrogen compounds are made available by the nitrifying bacteria in the soil, *Nitrosomonas* and *Nitrobacter,* which convert complex compounds into nitrates that are available to the plant. Nitrate only exists in the soil in a soluble form and thus there is a constant loss of nitrogen by drainage.

Recommendations: Nitrogen supply is intimately connected with the decomposition of organic matter in the soil. Fresh organic matter is poor in available nitrogen and in decaying there is still little available for the trees owing to the requirements of the soil organisms. Highly nitrogenous substances, such as dried blood and fish meal, are quickly broken down and provide available nitrogen for plant growth at this critical period. Nitrogen deficiency is exhibited in the following manner. The young leaves are light yellowish green, the veins being slightly lighter in colour. They are undersized, thin and fragile, and develop into very light green leaves which turn yellow if any fruit is produced. Shedding of leaves is heavy and thus the foliage sparse. Trees may have sufficient nitrogen in spring but be deficient in summer and autumn as the fruit matures and there is a heavy drain on the tree. Green leaves slowly bleach, become entirely yellow and are shed. Trees deficient in nitrogen frequently produce good quality fruit as far as texture and flavour are concerned, but the crop is very light.

Endeavour, therefore, to keep the soil near neutral point pH7. In soils more acid than pH6 the beneficial nitrifying bacteria, which fix atmospheric nitrogen, cannot thrive.

Grow leguminous cover crops in order to increase the organic matter of the soil, improve soil texture, provide nutrients for beneficial bacteria, and increase the nitrogen content of the soil through the symbiotic partnership of the beneficial bacteria (in the root nodules) and the plant. When turning in cover crops, add quick-acting nitrogenous fertilisers. This is the period when insufficient nitrogen is likely to be available to the trees and this is the important period when citrus trees commence spring growth and set their new season's fruit.

Keep soil adequately aerated, as beneficial bacteria are aerobic, i.e., they require oxygen, and harmful bacteria or denitrifiers thrive in wet and badly aerated soils and release nitrogen to the atmosphere.

In contrast with the mineral elements, nitrogen gives quantity rather than quality. Apply nitrogenous manures, of which the following is the list with approximate nitrogen content.

Blood and Bone—7% nitrogen (insoluble in water).

Dried Blood—12% nitrogen (insoluble in water).

Fish Manure—6% nitrogen (insoluble in water).

Sulphate of Ammonia—20% nitrogen (soluble in water).

Nitrate of Soda—16% nitrogen (soluble in water).

Farmyard Manures—0.6% nitrogen approx.

A. M. W. GREIG, Citriculturist, Auckland.

REMINDERS FOR MONTH:

Continue systematic pruning, giving particular attention to trees affected by frost or citrus-brown-rot.

Remove dead wood from citrus trees. This is the natural breeding ground of the citrus-borer.

Check your trees for bark-blotch. Early detection and treatment is essential.

Apply a 3-4-50 Bordeaux this month. This is of the greatest importance to young lemon fruits..

Harvest your citrus fruits with care.

Cool Storage Notes

Inspection of Fruit in Storage

THE season is now well advanced and cool storage stocks of apples and pears are considerably reduced. The fruit remaining in store will need to be opened up for examination to ascertain its condition and suitability for marketing. Fruits which have deteriorated during storage should be removed and repacking of some lines may be necessary.

Granny Smith apples which were placed in storage at the correct stage of maturity, wrapped in oil wraps, and held at a flesh temperature of 32-33 deg. F., should still be in sound condition. The larger sizes, if not already disposed of, should be carefully examined and placed on the market while in sound condition. They may be tested for the development of discolouration of the skin by removing samples of the fruits into ordinary atmospheric temperatures, and keeping them under observation for several days.

The Delicious variety should not be held for a further period, unless they are in a crisp and firm condition.

It would be beneficial if apples required for repacking are removed from cool storage chambers in small quantities, and immediately returned to the cool chamber when repacking has been carried out. If not marketed within 7 to 10 days, they should be re-examined and any faulty fruits removed before despatch to the markets.

When the fruit has been removed from the cool chambers at the close of the fruit season, the chambers should be thoroughly cleaned of refuse and waste fruit. Rejected fruit should not be left in cases, and all waste fruit should be immediately removed from the vicinity of the packing shed and cool store.

—A. A. POWELL, Cool Storage Officer, Wellington.

Vegetable Production in the Home Garden

One of the greatest blessings that can be conferred on a people (and it is a blessing which will bring knowledge, virtue, and peace in its train) is to teach them how to cultivate those vegetable productions which constitute the best riches of mankind.

Anon.

NATIONAL emergency demands the utmost vegetable production from the garden. Growing fresh vegetables for human consumption has become recognised as a section of horticultural science of first importance. Consumption of fresh, green leafy vegetables is increasing, mainly through the recognition of their nutritional value. Production of vegetables in the home garden, therefore, instead of being merely a pastime job, has become a work of necessity.

To maintain production in the garden at the necessary high level, three main phases of soil management should be recognised. First, systematic replenishment of organic matter; second, suitable and adequate liming; and, third, the application of balanced fertilisers. Of these, the latter presents the greatest difficulty. Fertilisers necessary for the production of succulent, green leafy vegetables may, under certain conditions, be detrimental to the best development of root crops and other varieties. Applications of fertilisers in an improperly balanced combination may have an injurious effect on the crop they are intended to benefit; hence one of the reasons for crop rotation.

All vegetable crops do not require the same fertiliser treatment; consequently rotational cropping will be a factor in maintaining a necessary balance of plant nutrient in the soil. This method of cropping is recognised as one of the best means of maintaining the soil in a healthy condition, and of preventing the developing of soil fungi and bacteria which, at certain periods, are likely to attack growing crops.

November will be a very busy month, and a special effort should be made to provide fully for late autumn and winter supplies of vegetables. Carrots, parsnips, swedes, leeks, savoy cabbages (early and late), broccoli, brussels sprouts, kale, and silver beet—these varieties constitute the basis for winter requirements.

Carrots

Seed produced last season is desirable, but not absolutely necessary for main crop production. Two-year-old seed, if it has been properly stored, should give satisfactory germination. Sow in rows 12 inches apart, and, provided thinning for domestic use cannot be carried out quickly enough to permit of proper development of the carrots that remain, the crop should be thinned to 2½ to 3 inches apart. In loose, sandy soil, thinning is rarely necessary, if the seed has been sown carefully and sparingly. When surplus carrots are removed, the soil should at once be made firm around the remaining roots. Upon this sowing and its subsequent care depends the winter supply of carrots.

Aphides, which attack the foliage, may be destroyed by spraying with nicotine sulphate. When using this insecticide—usually sold by seedsmen in 1oz. bottles—the directions on the container should be followed. For the destruction of the carrot fly, broadcast horticultural naphthalene at the rate

Seasonal Don'ts

Don't

neglect the use of liquid fertiliser made from cow or fowl manure. Crops such as lettuce, peas, tomatoes and rhubarb will be substantially benefited by its use.

Don't

put off till tomorrow dusting or spraying young seedlings to protect them from the ravages of insect pests.

Don't

fail to realise that plants, like animals, are living things, and require to be fed and properly cared for.

Don't

have all your vegetable varieties ready for harvesting at the same time. This shows lack of proper planning, and is unsound garden practice.

"HUME"
CONCRETE PRODUCTS
We wish to advise all customers that we are now actively engaged on essential War Work.
In the meantime we shall be manufacturing only limited supplies of
WATER TROUGHS, WASHTUBS, BOILER FRAMES, SEPTIC TANKS, PAVING SLABS, TERRAZZO SINK BENCHES, Etc.
Send your enquiries early. All orders will be filled in strict rotation.
HUME PIPE COMPANY
(AUST.) LTD.
Box 1734, 4th Floor, Safe Deposit Building, HIGH ST., AUCKLAND.
Box 287, YORK HOUSE, WELLINGTON.
Box 2, Hornby, CHRISTCHURCH. Ravensbourne, DUNEDIN.

What to Do in the Home Garden Next Month

Summary of Operations During November

SUCCESSIONAL SOWINGS.

Lettuce, peas, celery, tomatoes, spinach, sweet corn.

OTHER SOWINGS.

Carrots, parsnips, and all autumn and winter-maturing crops.

PLANTS TO SET.

Tomatoes, cauliflower, early Savoy cabbages, lettuce, silver beet.

PERENNIAL CROPS.

Rhubarb.—Harvesting of spring and summer varieties may be continued till Christmas. Pulling stalks from winter varieties should cease in mid-October.

Asparagus.—Young roots should not be exhausted by over-cutting. Spears from established beds may still be cut without fear of root deterioration.

of 1oz. to 9ft. of row. The crop should not be grown on land which produced carrots the previous season.

Parsnips

The recommendations made with regard to carrots may, generally, be applied to the production of parsnips, except those concerning seed. To save time and prevent disappointment, it is desirable to sow seed produced during the previous season. Parsnip seed deteriorates very quickly under almost any conditions, hence the necessity for the above suggestion.

Autumn and Winter Vegetables

If not already attended to, further delay in sowing seeds of the kinds of vegetables mentioned, may lead to disappointment with the development of the prospective crops. To produce the young plants, seedling boxes 6in. deep may be used, or a seed-bed made up in a part of the garden not unduly exposed to the sun. Seed germination during November may be encouraged by the provision of adequate shade and shelter.

When growing seedlings under shaded or protective conditions, a sharp look-out requires to be kept for slug damage. Where this is observed a cheap and destroying agent is burned or hydrated lime which should, however, be applied in the evening. A most economical and efficient method of applying the lime is by placing a small quantity in a bag made of tight scrim or some such comparatively loosely-woven fabric, and, while standing beside the seed bed, quickly raise and lower the bag with its contents, the lowering being in the nature of a sudden drop. The lime will thus be diffused in a fine cloud, the larger particles remaining in the bag.

Keep the seedlings well watered, and should there be any tendency for them to become "hard" or stunted, a tablespoonful of nitrate of soda dissolved in 4 gals. of water may be applied as a liquid fertiliser. Dusting with derris, or spraying with nicotine sulphate, may be necessary to protect the young seedlings against attacks by aphis or caterpillars.

Tomatoes

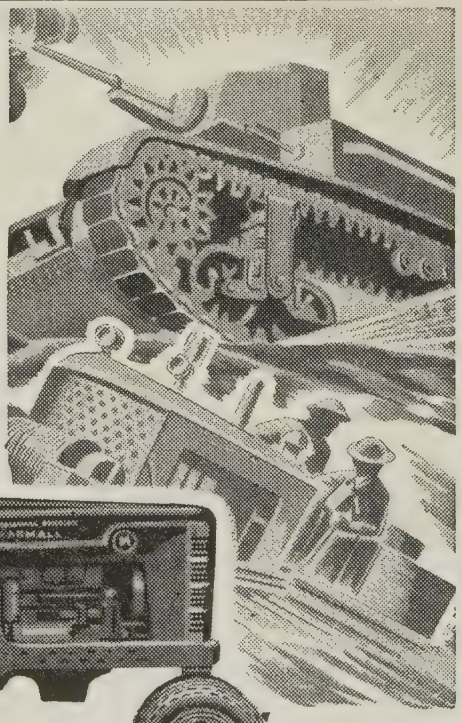
Nothing less than a maximum crop should be aimed at during the season, and this can only be secured by close attention to appropriate cultural practices. The tomato is a plant which,

ARMS FOR NEW ZEALAND'S FARMS

Because there is no single factor in New Zealand's war effort more vital than the maintenance and increase of farm production, International Harvester, pioneers and leaders in mechanised farm equipment, adopts this creed for the duration of the war.

We will focus our big manufacturing resources, our famous dominion-wide service organisation, our energies, our resources, our brains and our experience are marshalled to this one end: the supply and the maintenance of all possible power equipment for the greater strength and security of New Zealand.

There is no need to point out to farmers that McCormick-Deering tractors, mobile and in sound repair, might, in an emergency, prove invaluable for military haulage. Let International Harvester help you look after those precious farm machines.



INTERNATIONAL HARVESTER CO. OF N.Z. LTD.

International Trucks, McCormick-Deering Tractors and all farm implements, power machinery & milking machines.

Auckland, Wellington, Christchurch, Dunedin.
(Service everywhere)

in the production of fruit, will give adequate compensation for all the attention it receives. Regular cultivation to destroy weeds and maintain a soil mulch is necessary for the conservation of moisture, which is so essential for the proper development of the plants. "Pinching" out all shoots which start into growth at the junction of the leaf and stem should not be neglected. Early spraying with Bordeaux mixture 3-4-50 will be necessary to protect the plants from attacks of blight.

Potatoes

No opportunity should be neglected which will enhance the production of this crop. The top growth may be protected from Irish blight by applications at 10-14 day intervals of the same fungicide as that recommended for tomatoes. Particular care should be taken to see that the underside of the leaves is adequately covered, as it is here blight may develop, temporarily unobserved. "Banking" should be high enough to cover all the tubers growing close to the surface, and this should be finally carried out as the haulm reaches the flowering stage.

When digging only a small quantity of potatoes—for kitchen use—the break in the row should be sealed by firming the soil where the digging was stopped. This will prevent greening of the tubers and protect them against attacks by the potato tuber-moth.

Should late-blight develop among the potato crop and get beyond control, the tubers may be saved from infection by cutting the tops off close to the ground and destroying them by burning. To allow blighted haulm to die right down may, through infestation, result in the loss of the crop.

Kumeras

Soils and Manure.—A light sandy, well-drained loam, situated in a warm sheltered position is the ideal soil and location for a kumera bed in the home garden. Stable or farmyard manure applied to the land immediately before planting is not recommended; but these manures may advantageously be utilised for the preceding crop. Provided the soil has been limed during the past season, further applications will not be necessary for present production.

Fertiliser containing excessive nitrogen will tend to produce rank foliage growth instead of tubers. This can be largely avoided by applying a fertiliser made up of one part sulphate of ammonia, three parts superphosphate, and one part potash. The parts should be measured by weight, applied at the rate of ½lb. to every five yards of row, and well worked into the soil before setting the plants.

Planting.—For the home gardener rooted cuttings or "slips," as they are sometimes named, will be the most convenient for planting. These can usually be purchased from nurserymen carrying on business in areas particularly suitable for kumera production. Eighteen inches between the plants set on ridges spaced 24 to 30ins. apart, will be sufficient space to permit of proper development. Deep planting is not recommended, the aim being to prevent the tubers from growing deep down in the soil which makes digging more difficult. If set during dry conditions, the plants should be watered in. When growth has properly started, cultivation, which should always be shallow, is necessary only for weed destruction and keeping the surface soil loose. As soon as the vines begin to spread, weeds will have little opportunity of development. Occasional raising of the vines with the aid of a hoe or rake handle will prevent the foliage rooting at the nodes.

Its practical immunity from serious diseases offers special inducement for kumera production in suitable areas. Mid-November generally, is an appropriate time for planting and growth should be permitted as long as possible until there is the probability of the vines being destroyed by frost. The plant is particularly sensitive to frost, and prolonged cold weather is inimical to its best development.

Beans

Sowings may be made immediately the danger of frost has passed. An early-maturing dwarf variety is likely to produce the first beans for use; but the climbing varieties will bear a crop over a much longer period. The seeds of dwarf varieties should be sown 3in. apart, in shallow trenches, and thinned to twice this distance. If the seeds are planted as recommended, 1½ins. in the soil will be sufficient depth coverage to allow. As the bean is not a deep-rooting plant, the trench, when filled in by after-cultivation, will give the plant more resistance to high winds. Sufficient distance between the rows is necessary to permit of subsequent "banking," and so assist the plants to remain upright.

Climbing varieties may be trained to any upright or to wire-netting. As the plants begin to grow and develop tendrils, these should be brought together, loosely fastened to and subsequently trained round the upright or up the wire-netting.

Celery

Seedlings from early September sowing may be planted out towards the end of November. Having already been pricked out, the plants should be set in the place where it is intended they should grow to maturity. If it is decided to grow the plants in a trench, this should be 12ins. deep with a layer of stable or farmyard manure placed at the bottom, and covered with soil to a depth of 3in. Into this soil the plants are set 9ins. apart. The soil which has been removed can be placed neatly by the side of the trench and lettuce plants set on the ridge. These will mature and be harvested before the celery is fully grown. In the absense of lettuce plants, a crop of radish may very well be grown on what would otherwise be a waste piece of the garden.

To grow the celery in a bed, the plants may be set 12ins. apart each way. A heavy dressing of stable or farmyard manure dug into the soil before planting would be of great assistance to the growth of the young plants. In preparing the ground, a mixture of four parts blood and bone, two parts superphosphate, and one part potash—all by weight—may be broadcast over the bed at the rate of ¼lb. per square yard, and well worked into the soil.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

A Correction

Use of Animal Manures

ON page 414 of the June issue of the Journal there appears an incomplete statement regarding certain animal manures. The following is submitted as correct:—

ANIMAL EXCRETA, LITTER, ETC.

		One ton contains lbs. of			
	% Water.	Organic Matter.	Nitrogen.	Phosphoric Acid.	Potash.
Horse dung ..	75.8	470	9—12	8	2—9
Cow dung ..	83.5	327	4—10	2—4	1—2
Sheep dung ..	51.6—65.5	700—1000	12—16	6—7	3—4½
Pig dung ..	76—84	220—400	9—16	2—13	3—8
Fowl manure	59.7	660	18—36	11—33	13—20

Seasonal Work for Beekeepers

Identification of Bee Diseases

DISEASES of bees which the beekeeper has to contend with may be divided into two classes—those that affect the adult bees and those that attack the brood. The most serious adult bee diseases which occur in various countries throughout the world are Acarine disease (*Acarapis woodi*), dysentery; Nosema disease (*Nosema apis*), paralysis; bee-louse (*Braula coeca*); and those of the brood, American foul-brood (*Bacillus larvae*), European foul-brood, (*Bacillus pluton*), and sac-brood.

Spring Dwindling

While dysentery and, to a much lesser degree, bee paralysis, cause trouble and losses under certain conditions, strong winds are the chief cause of serious spring dwindling at the most critical period of colony development in many New Zealand apiaries. This condition is most common in well-sheltered apiary locations, situated in areas where the field bees must travel over comparatively flat country exposed to prevailing winds, to reach early nectar supplies. Where field bees are unable to take cover along depressions in gentle rolling or hilly country during flight, they are forced down by strong cold winds and die of exposure in great numbers.

When these conditions suddenly reduce colony strength to a dangerous level, beekeepers should reduce the super accommodation of each hive to provide comfortable conditions for the remaining force of bees, thus assisting to build up again in strength as soon as possible to meet the main honey flow. The necessity for feeding weakened colonies, and also the distribution of combs containing hatching brood, with adhering bees, taken from the strongest colonies (in disease-free apiaries), should also be considered.

In all locations affected more or less by these conditions, it is imperative to keep only young vigorous queens, otherwise the bees are unable to build up their strength in sufficient numbers to store a surplus of honey during that season.

Dysentery and Bee Paralysis

Scientific investigators state that dysentery is a physiological disturbance, not involving pathogenic organisms, and that the name paralysis has been applied to quite a vague condition of sickness of adult bees. Fermented or poor-quality stores, excessive moisture in the hives, or insufficient protection, which tends to cause the consumption of more food than is necessary for normal wintering, may cause dysentery. Where bees are subjected to these conditions, and are unable to take regular cleansing flights, due to low temperatures or bad weather conditions, they become diseased owing to undue retention of accumulated feces.

Affected bees void their feces, which are dark and muddy in appearance within or near the hives. This trouble weakens the affected colonies considerably. It can be avoided by providing the bees with clean, dry conditions and adequate stores of good-quality capped honey. While there is no general agreement as to the cause of bee paralysis, the main symptoms are loss of ability to fly, spasmodic trembling, distended abdomen, and dark-coloured shining body. Bees in this condition usually crawl out of the hive and die, or are ejected by the more healthy members of the colony. They are very conspicuous by their trembling and intermittent movements of the legs and wings. There is no evidence of transmission to nearby colonies and the disorder usually disappears if the affected colonies are promptly re-queened.

Other adult bee diseases are of no importance in New Zealand apiaries.

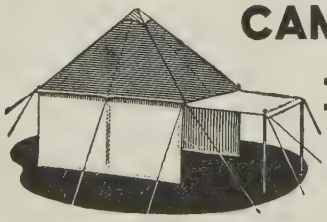
Diseases of the Brood

American foul-brood is by far the most serious of the diseases which attack the brood. Beekeepers should keep a sharp look-out for symptoms of brood diseases at every inspection of their bees, and should immediately report any brood troubles to the Apiary Instructor for their district, who is in a position to advise the proper methods of treatment.

While no positive evidence has been found to show that European foul-brood (*Bacillus pluton*) is present in New Zealand, the accompanying identification table prepared by Webster will assist beekeepers to identify any brood troubles that may occur in their apiaries:—

—T. S. WINTER, Senior Apiary Instructor, Wellington.

	American Foul-brood.	European Foul-brood.	Sac-brood.
Causative organism ..	Bacillus larvae ..	Bacillus pluton ..	Filterable virus
Odour	Usually strong, offensive	Not offensive ..	None
Amount of brood affected	Usually much	Usually much ..	Usually little
Cappings	Often sunken and perforated	Affected brood mostly unsealed	Sunken and less prominent than American foul-brood.
Age of larvae	Usually die after capping	Usually die before capping	Die after capping
Colour	Become dark brown	Yellow-grey, brown	Become dark brown
Consistency	Sticky, "roping" out 3 inches	Soft, breakable, sometimes slimy	Watery, granular
Position in cell	Usually lengthwise, soon becoming shapeless	Usually curled at bottom	Lengthwise; become mummified
Pupae	Sometimes affected. Tongue sticks up.	Not affected ..	Not affected
Scales	Dark brown stuck to floor of cell.	Yellow to brown, free; at bottom of cell	Blackish; free; lengthwise along floor.



CAMPING'S GRAND FUN

. . . when you use "Roylete" Tents and Camp Comforts

"Roylete" quality Camping Equipment provides you with a secure convenient holiday home year after year. All enquiries receive our best possible attention under war conditions . . . but ORDER EARLY!

Write for free, illustrated booklet of "Roylete" Tents, Furniture and Goods for Summer Enjoyment.

E. Le Roy Ltd.

Dept. "D.A.," Box 780, 81 Queen St., AUCKLAND.

DOMINION OF NEW ZEALAND

NOW OPEN

2nd LIBERTY

LOAN

£10,000,000

FOR WAR PURPOSES

Subscribe Early!

IN EITHER OF THE FOLLOWING FORMS:—

2½ per cent. STOCK
Repayable 15th May, 1948.

3 per cent. STOCK
Repayable 15th May, 1953-56.

Interest Payable on all Monies from Date of Receipt.

PRICE OF ISSUE : : : £100 per cent.

Payable in full at time of application or by instalments as follows:—

£30 per cent. on application.
£30 per cent. on 15th Dec., 1942.
£40 per cent. on 27th Jan., 1943.

MINIMUM SUBSCRIPTION £10

Copies of Prospectus and Forms of Application may be obtained from any Bank or Postal Money Order Office, at the District Treasury Offices at Auckland, Christchurch and Dunedin, or from members of any Stock Exchange in the Dominion.

LOAN CLOSES 14th NOVEMBER

Notes for the Poultry Farmer

A Summer Colony-House

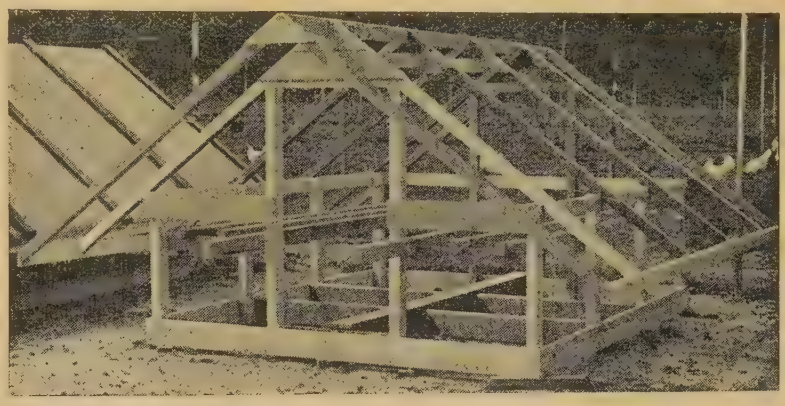
By
R. E. GUY,
Poultry Instructor, Wellington

OVERCROWDING is one of the most common causes of young pullets and cockerels failing to attain the desired size and stamina at maturity. This occurs not only in the brooder, but also in the subsequent growing stage when they no longer need artificial heat.

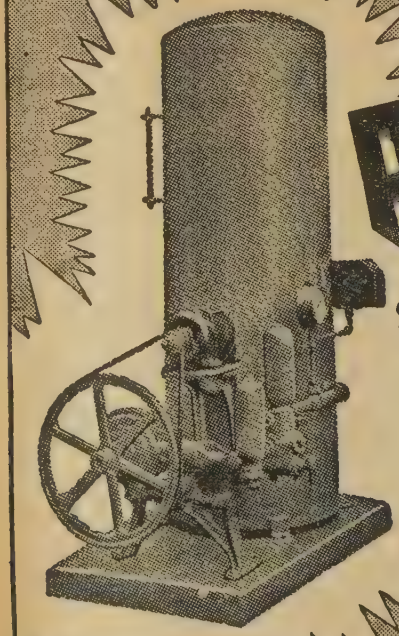
Too often growing cockerels, which represent half a future breeding pen, are allotted the poorest accommodation on the farm, and when the time comes to find good-bodied, vigorous breeding cockerels, such birds are not available. Any sound scheme that will help to alleviate these problems commands the poultry-breeder's immediate attention.

Construction

The range shelter described has proved successful for rearing young stock from ten weeks old to maturity at the Government Poultry Station. In a cold and windy locality this open-sided type of house has provided adequate protection against inclement weather. For durability and insulation against sudden changes in temperature a wood roof, covered with 3-ply malthoid, as illustrated, is desirable. A wire-netting and 3-ply malthoid roof



Efficient water supply on the farm
WITH
RENOWN PUMPS
& AUTOMATIC PRESSURE SYSTEMS

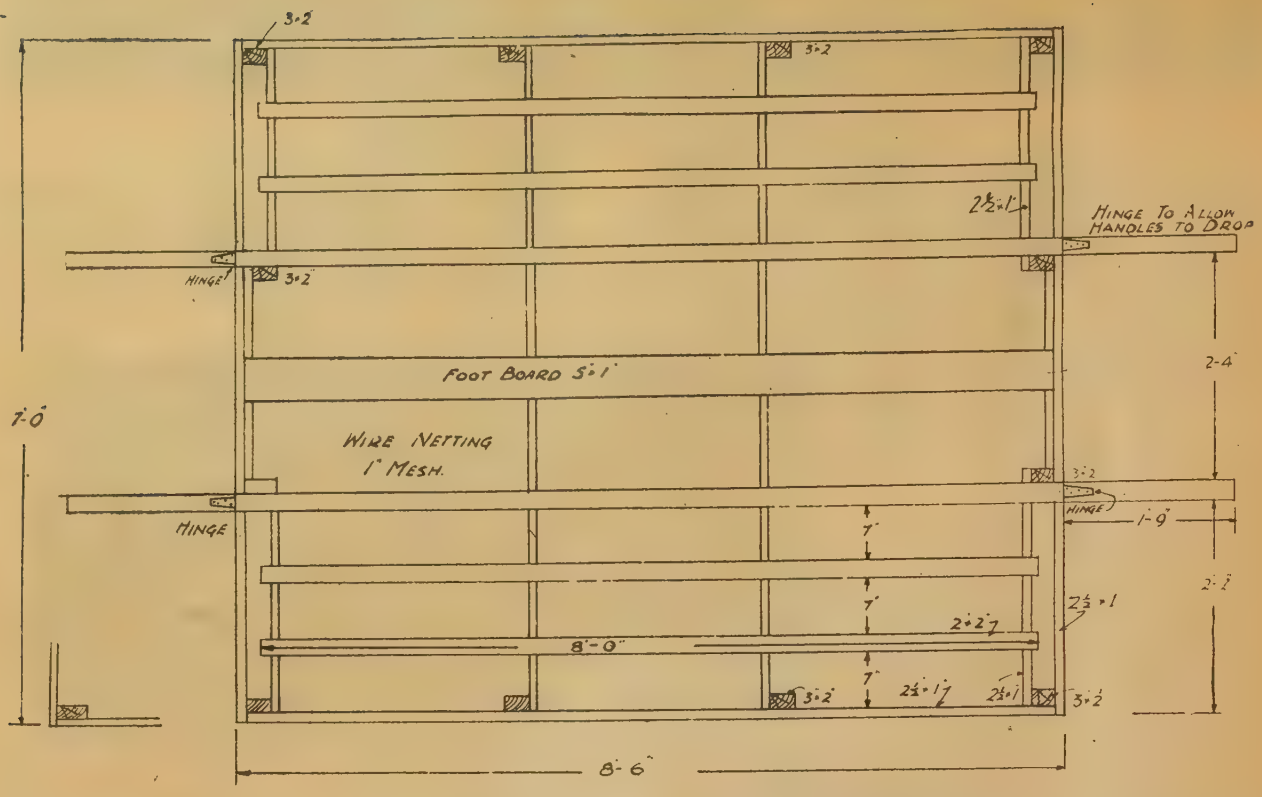


Renown Pumps and Automatic Pressure Systems eliminate overhead tanks and give all the advantages of a City High Pressure Water Service to large and small farms, homesteads, institutions, etc. Lack of complicated mechanism makes necessary maintenance practically nil. Let us quote you.

W. H. PRICE & SON LTD.,
34-36 Manchester St.,
Christchurch
Est. 1879. P.O. Box 1084.

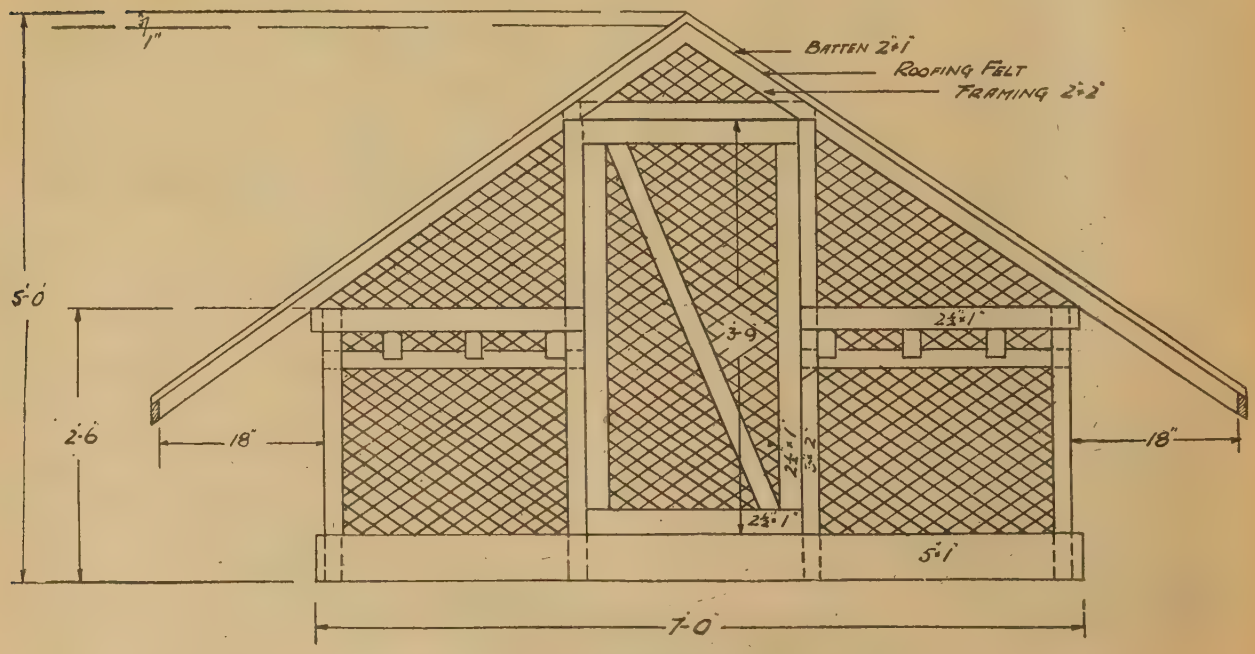
POST THIS COUPON FOR FULL PARTICULARS

W. H. PRICE & SON LTD.,
CHRISTCHURCH.
Please send me full particulars of "RENOWN" Pumps and Pressure Systems.
NAME.....
ADDRESS.....
..... 1A



PLAN SUMMER RANGE SHELTER

Note: Read "2 in. x 1 in." for "2½in. x 1 in." in every case. Hinges on the handles are not recommended.



FRONT ELEVATION

would be satisfactory for summer use only, and at the same time make the shelter lighter to carry.

The roof shown is of 6 in. by 1 in. tongue and groove O.B. eave sarking. Half-inch timber is suitable for this purpose, but it must be tongued and grooved to prevent warping and subsequent splitting of the malthoid. On the ground of cost, alone, however, 6 in. x 1 in. timber was used, the half-inch timber proving more costly. Iron, if obtainable, would make a satisfactory roof, provided building or other similar paper were used under it to prevent an excessive temperature directly over the birds. The air flowing through the house will then keep the temperature at a comfortable level.

The wire floor is both a valuable disease-control measure and labour-saver, since an accumulation of droppings will not endanger the health of the birds. The floor boards supporting this wire should be levelled to a quarter of an inch, thereby allowing the droppings to fall through more easily. It has been found that 1½in. square mesh netting is very suitable for this purpose. The height is 5 ft. to the apex and the walls are 2 ft. 6 in., while the floor is 7 ft. wide by 8 ft. 6 in. long.

A shelter of these dimensions, with six perches, is suitable for approximately 100 cockerels or pullets at 10 weeks of age, but this number must be reduced to 50 and 60 respectively when the birds are four months old. Neglect to "thin out" the birds at this age will lead to overcrowding and a consequent check in development.

The centre perches of 3 in. x 2 in. timber are carried through the ends, providing handles for moving short distances, but the shelter should be raised on skids if required to be moved an appreciable distance.

Location

The houses are placed in open paddocks with the side of the roof facing the prevailing wind. They can be moved for cleaning and then put back on the same ground, so that the young stock cannot scratch where their roosting quarters have been. The shelter is moved to a fresh position for the next season, and the old position thoroughly cleaned up and **well limed.**

With shelters of this type crowding or tail-picking is avoided, while plenty of fresh air and lack of overheating provide ideal conditions for vigorous growth. In the case of cockerels, there is less bullying and better control over external parasites (lice and mites) than when the birds are allowed to roost in trees.

The mash hoppers or troughs should be gradually moved away from the shelter, to induce the chickens afield during the daytime. If these are moved on daily, fresh ground is provided for feeding and bare patches are avoided.

If it is desired to put chickens of a younger age (six to seven weeks) into these shelters, partially covering the sides and ends will afford additional temporary warmth. The sides and ends should not be completely covered since this would prevent satisfactory ventilation.

POULTRY

The Poultry Department at Massey Agricultural College is well equipped to supply your requirements in breeding cockerels, stud stock, hatching eggs, and chicks. All popular breeds kept. Sittings (15 eggs) posted at 10/-, 20/- and 30/-. Price list from—

THE POULTRY MANAGER, MASSEY COLLEGE, Box 601, Palmerston North.

Federation of Young Farmers' Clubs

Western Southland District Field Day and Debate

By A. STUART, District Secretary, Invercargill.

THE Young Farmers' Clubs of Western Southland held a Field Day in Invercargill recently, when the opportunity was taken to visit a number of factories and other works in the city. There were 40 club members present and also 30 boys of the agricultural class of the Southland Technical College. The guests included Messrs. R. J. Reid (chairman of the Otago-Southland Council, and vice-president of the Federation), S. R. Whyte (hon. secretary, Otago-Southland Council), J. Middlemiss (chairman, Western Southland District Committee), and J. W. Woodcock (Fields Superintendent, Department of Agriculture, Dunedin).

The first visit was made to the Invercargill Dairy Company's factory, where the process of pasteurising milk was fully explained. Two factories where munitions are being made were also visited in the morning. After luncheon the party inspected the seed-cleaning plant at Messrs. Wright, Stephenson and Co.'s store, where the manager, Mr. John Macdonald, explained that all the turnip seed now used in New Zealand was produced in Otago and Southland, and cleaned and dressed at the plant in Invercargill. Mr. Macdonald also stated that a new variety of oats, Garton's Royal Scot, had lately been introduced into the Dominion; superior to Garton's Onwards, it produced a finer chaff and being stronger in the head was not not liable to break.

At the bakery of A. C. Millar's, Ltd., the party saw the process of baking bread by machinery. Mr. W. W. Millar gave an interesting address on flour and bread and informed visitors that there were a thousand recipes for breadmaking. A visit was also paid to the office of the Southland "Daily News."

Afternoon tea was served at the U.F.S. Hall by members of the Women's Division of the Farmers' Union. Short addresses were given by Messrs. J. W. Woodcock (Fields Superintendent, Department of Agriculture), A. Stuart (hon. secretary of the Western District Committee), and Mrs. H. Anderson (representing the Women's Division). Mr. E. Rabbidge, Wyndham, on behalf of the club members, thanked the organisers of the field day.

In the evening impromptu debates were held, the judge being Mr. K. E. McKinnon, Agricultural Instructor at the Southland Technical College. Three teams had been entered and an impromptu fourth composite team was formed. The first debate was on the subject "That life on an up-country sheep station is to be preferred to life on a dairy farm." The Orepuki team (E. Erskine, D. McPherson and L. Brown) took the affirmative and scored 286 points, while the Dipton team (B. King, J. Crawford and A. Mayer) took the negative, scoring 295 points. The subject of the second debate was "That during the present crisis the use of motor-cars for pleasure should be prohibited." The Woodlands team (A. S. Trotter, K. Maxwell and L. Middlemiss) took the negative, scoring 298 points, and the impromptu team (M. W. Clark, A. Iggo and I. Lindsay) took the affirmative and scored 285 points. As both debates were judged on points the Woodlands team thus secured the honours of the evening. Thanks were extended to Mr. McKinnon for acting as judge, and to the Women's Division of the Farmers' Union for providing supper.

Some of the delegates at the Eighth Annual General Meeting held in Dunedin on July 1st. Front row, left to right, Messrs. J. Middlemiss (Southland)), S. R. Whyte (Hon. Secretary, Otago-Southland Council), D. E. Waide (Chairman, Auckland Council), T. E. Streeter (Chairman, Canterbury Council), S. G. Avery (Chairman, Wellington Council), S. Freeman (Dominion Organising Secretary), D. S. Ross (Dominion President), R. J. Reid (Chairman, Otago-Southland Council, and Dominion Vice-Chairman), A. C. Cameron (Past President), J. W. Woodcock (Department of Agriculture), H. L. Chisnall and J. Barclay (Canterbury Council).

Mid-Canterbury District Debating Competition

By S. WATSON, Ashburton Y.F.C.

THE cup presented by the Ashburton Rotary Club for the winner of the Mid-Canterbury Young Farmers' Clubs inter-club debating tournament was held this year at Ashburton and won by the Hinds Club.

The Hinds team supported the affirmative against Methven (the winning club last year), the subject of the debate being "That we farmers of New Zealand are doing our maximum to win the war." The Hinds Club was represented by W. Taylor, J. R. Cocks, and D. Chisnall the total of these speakers' points amounting to 249. The Methven team consisted of R. Penny,

R. Wightman, and D. McLaughlin; this team scored 242 points.

The other competing club was the Ashburton Technical High School Y.F.C., the speakers being S. Watson, K. Latimer and H. Bennett. This club scored 203 points, taking the affirmative against a team from the Ashburton High School Debating Club, which completed the draw, and so made the contest even, but did not compete for the trophy. The High School Club team was made up of G. Smith, I. Hay and M. Norrish.

Mr. W. B. Elwood acted as judge and placed W. Taylor as the best speaker of the evening, with 80 points; he congratulated the speakers on the general excellence of their performances.

When presenting the cup, Mr. S. P. Taylor (Chairman of the Ashburton County Council), said that he had probably a unique pleasure in being able to present the cup to his son, W. Taylor, the leader of the winning team.

Mr. H. L. Chisnall (Chairman of the Mid-Canterbury Y.F.C. District Committee) presided, and Mr. H. Watson acted as timekeeper.

Reports on Club Activities

WESTERN SOUTHLAND.

Woodlands.—Team consisting of K. Hargest (leader), K. Maxwell and A. Trotter selected for annual debate. Reports by M. Clark and A. Trotter on the annual meeting of the Otago-Southland Council and the annual meeting of the Federation respectively.

Wyndham.—Discussion on forthcoming debate. Interesting address by Mr. D. Cambell on "My Experiences in Sheep Farming" and "Stud Sheep Breeding." At the anual meeting the following officers were elected: Advisory president, Mr. F. J. Dunbar; chairman, K. Townley; secretary and treasurer, E. Rabbidge. This club is carrying on successfully with twelve members.

DUNEDIN.

West Taieri.—General discussion among members on topics of interest to young farmers.

MID-CANTERBURY.

Methven.—Lecture by Mr. W. J. McLean, of Lincoln College, on "Diseases of Ewes and Lambs at Lambing Time."

CHRISTCHURCH.

Ellesmere.—Lecture by Dr. Burns of Lincoln College on "Soil Deterioration and Soil Reclamation in New Zealand." One new member was elected there being an attendance of 22 members out of a total membership of 42. Recent unreported meetings have included the following: Talk by the Rev. H. W. Payne entitled "Impressions of My Tour Abroad"; and short talks by members on "Merino Sheep" (W. T. Abbott), "Varieties of Wheat" (J. Brooks), "Footrot and Its Treatment" (F. Bishop), "White Clover" (F. J. Greenwood), "Shorthorn Cattle" (H. D. Hurford), "Lucerne Hay" (L. A. McLachlan) and "A Deerstalking Trip" (O. J. Osborne).

MARLBOROUGH.

Seddon.—Two new members elected; club carrying on successfully with twelve members. Lantern lecture by Mr. L. W. Blackmore, Department of Agriculture on "Potatoes."

NELSON.

Murchison.—Discussion on' Dog Trials. This club has a membership of 24.

MANAWATU.

Bunnythorpe.—Talk by Capt. A. J. Galpin on "Potatoes." Three new members enrolled, making a present active membership of fourteen. At a recent meeting it was unanimously decided to carry on with the monthly meetings. At previously unreported meetings addresses were given by Mr. R. Stewart, advisory member ("My Trip to England and the Continent"), and Brian Fowler, a club member ("Germany").

Rongotea.—Discussion on the annual general meeting of the Federation. Arrangements for the anual parents' and friends' evening. Address by Mr. H. J. Lancaster, based on the statement by a grassland expert that "The Dairy Cow Gives a Greater Monetary Return Per Acre Than any Other Animal." Members of this club are keeping up a regular correspondence with fellow-members overseas, keeping them in touch with club and local affairs.

WAIRARAPA.

Alfredton.—Talk by Mr. Parsonson on "Trees"; the speaker gave many instances of how the indiscriminate cutting down of the bush has denuded country in all parts of the world and particularly stressed the point that more planting should be carried out. This club is carrying on quite successfully with fifteen members.

Carterton.—Report of meeting of district committee. Arrangements for future club meetings. A question evening was held; each reply was of at least three minutes' duration.

NORTHERN HAWKE'S BAY.

Meeanee.—Discussion re bird menace to crops in consideration of the extra areas of wheat to be sown this season; the secretary was instructed to write to the Primary Production Council to inquire whether it was contemplated that anything should be done about this matter. A demonstration and explanation of the use and working of the "Tommy Gun" was given by Corporal Griffiths, a club member.

TE KUITI.

Otorohanga.—Competitions to be arranged for impromptu talks and the most improved speaker. This club has recently increased its membership to eighteen and is carrying on successfully.

Paewhenua.—Arrangements for a debate. Prepared address of five minutes was given by a club member. An instructive address on "The Art of Debating" was given by Mr. P. H. Parr of Paewhenua.

WARKWORTH.

Kaukapakapa.—Arrangements for a field day. Entries accepted for calf-judging. Two new members enrolled. A. Dye, a member of the club who is at present taking a course at Massey College, spoke on some of the research work undertaken at the college; dehydration of butter; dissection of sheep to estimate the food value of each cut; digestibility of hay. Mr. P. S. Syme Department of Agriculture gave some valuable advice concerning the selection of paddocks to topdress during the fertiliser rationing; he also gave an instructive address on "Potato Growing."

LEARN THE "SECRETS" OF SUCCESSFUL FARMING

Farming today is a SCIENCE. The successful farmer understands farm accounting, book-keeping, finance, management, mortgages, banking, taxation, and legal rights.

You, too, can quickly acquire, in your spare time, a full knowledge of these things which will make you independent of professional advice and save you the expense of employing Accountants and Lawyers.

You can master these subjects in a few easy lessons . . . .

MORTGAGES.
FARM FINANCE.
ACCOUNTANCY.
BOOK-KEEPING.
FARM MANAGEMENT.
GENERAL FARMING BUSINESS.
TAXATION.
BANKING.
FARM LAW.

Send the Coupon NOW

FREE SEND FOR THIS BROCHURE

The Farm Accounting Association of N.Z. (Inc.), P.O. Box 693, Dunedin.
Dear Sir,—I am interested in Farm Finance and Accountancy. Please send me without obligation your Association's Brochure and details of your home study course.
NAME .....
ADDRESS .....
..... J.A.

Health Notes for the Farm

Half Measures No Use With Scabies

AMONG the crop of health troubles that war inevitably brings in its wake is an unpleasant complaint known as scabies; an irritating and contagious non-fatal disease that gives Army doctors more than a little worry.

And now it seems to be on the increase among the civilian population.

Scabies is one of the greatest of what might be termed the nuisance diseases of the Army. Once it gets among the troops it leaves a long string of casualties and Army medical officers regard it as one of their formidable problems. Indeed, in the last war it was one of the chief disabling diseases of the Army. Large concentrations of men always favour the spread of infectious and contagious diseases and now, having sneaked outside Army camps it is causing trouble among the civilian population.

The cause of scabies is a small spider-like insect about the size of a perforation of a fine needle. It is just visible to the naked eye. It has a particular fondness for the tender human skin and when it finds a nice warm and vulnerable spot it digs in and lays its eggs. Favourite places for burrowing are the front of the wrists, the webs and sides of the fingers, the elbows, front fold of the armpits, the belt line of the abdomen, the buttocks, the knees, ankles and feet.

The First Sign

At first a clear vesicle appears where the insect has burrowed. This later becomes a raised red spot, which if scratched is liable to become infected and develop into a bad sore. The worst feature of the disease is the intense itchiness of these spots, particularly at night. The tendency to scratch them is a natural one, especially if you happen to be half asleep at the time. This scratching of scabies spots into septic sores may set up slow poisoning of the blood.

The itchiness is caused by the burrowing activities of the insect. The warmer the skin the better it likes it. That is why the warmth of a bed encourages it to get busy at night, and to leave the victim listless and hollow-eyed in the morning through lack of sleep.

Scabies is usually spread through personal contact, and it has to be close contact. In an experiment lasting more than a year infected and uninfected people lived in one house, ate at the same table, used the same bathroom—in short, led a normal social life, but avoided close personal contact. Not a single case of scabies appeared in the controlled uninfected people. When volunteers slept in the same bed as scabies patients, in three out of four occasions the volunteers became infected.

Bedding and clothing were once regarded as the chief method of the spread of the disease. Whether blankets were a common means of spread was tested by allowing volunteers on 272 occasions to sleep naked for several nights in blankets previously used by scabies patients. Only four times was the infection conveyed. In 38 experiments the volunteer used underclothing immediately after it was removed from the scabies patient, and wore it day and night for seven days. In two cases only did the volunteers become infected. The risk of spread by bedding and clothing is small; the risk from personal contact with the sufferer is great.

Treatment

Treatment must be carried out thoroughly and in plenty of time. Half-hearted measures are simply waste of time. In the first place the body should be soaked in a hot bath for from ten to fifteen minutes, then rubbed with soap and finally scrubbed with a brush. Particular attention should be paid to the areas where the red spots appear. The effect of a hot bath is to open the burrows and allow the ointment to penetrate them.

Ointment

The ointment is rubbed lightly all over the body, after drying well. The most effective ointment for this purpose is known as Danish ointment, which rarely fails with proper application. It can be made up by any chemist. About two ounces is required for the average adult.

Having rubbed the ointment on, sit the patient near a fire for about ten minutes. A clean cotton garment should be put on next to the skin and the patient put to bed. Repeat the treatment on the second day and on the third day the patient should have a plain soap and water bath, and put on disinfected clothes.

If the scabies spots reappear it will be from new hatchings of eggs in the skin. A repeat treatment ten days after the first one usually ends the trouble.

Precautions

It is important that the bedclothes and clothing worn by the patient should be disinfected as a precautionary measure. Those that can be boiled should be boiled; woollen clothes and blankets can be loosely wrapped in newspapers to prevent scorching and put in a hot oven; or instead they could be soaked in a disinfectant solution overnight, then washed and dried in the sunlight. Clothes that cannot be washed or boiled, such as coats, should be hung in the sunlight and then ironed along the seams with a hot iron.

S. OPPENHEIMER & CO., INC.
(Incorporated in U.S.A. as a Limited Liability Company)
Established 1868 in New York, 1892 in New Zealand.
SAUSAGE CASINGS
Manufacturers and Exporters of New Zealand Casings. Importers of American Hog Casings.
Office: 38-42 The Terrace, WELLINGTON.
P.O. Box 350. Telephone 43-373

SUBSCRIPTION RATES.

The *Journal* is issued monthly. The subscription within New Zealand, which is payable in advance and includes postage, is 2s. 6d. a year. The overseas subscription is 5s. Subscriptions should be forwarded or paid direct to any office of the Department of Agriculture in the Dominion. Single copies, price 6d., are available from the Department of Agriculture, Box 3004, Wellington.

THE Good Neighbour

BY MARY

From Me To You

TODAY was the first real warm day of Spring, and what do you think I did? Three guesses—no, I didn't take the cable car, and find my way to the Botanical Gardens, which I should have done really, for at this time of the year the blossom trees and the gay spring flowers transform them into a fairy tale of enchantment; and I didn't follow the sun and find a sandy beach, where it would have been fun to have slipped into my bathing suit for the first sunning of the season—but not the first swim! And I didn't even stay inside and work! I just went shopping.

Shopping! I can hear you say. How dull! But not a bit of it. One of the letters in my morning mail held out a definite challenge to me, and I just had to obey it. "Do the first real warm rays of spring make you want to leave work, and sally forth?" wrote M., of Feilding. "I suppose Wellington shops have managed to make a gay display, defying the war. It is amazing how a few rolls of gay print can change the windows."

And, safely home after my afternoon escapade, with tired toes, but happy heart, I can tell M. that her suppositions regarding the shops of Wellington are every bit correct, and they have some of the most attractive displays of materials that I ever remember seeing. One cannot help but admire the fine spirit of our Motherland when one sees the beautiful fabrics that are still arriving, despite the very extraordinary circumstances. Do you pause to think, as you buy a length of some particularly attractive material, of the courage of the men of the merchant navy who have been responsible in no small measure for the safe arrival of that piece of silk which is destined to become your best frock for the summer ahead?

Names of the newest shades are alluring—one of the big stores had a display of silks all named after counties in England. You would love to see them too! Despite coupons and rationing, people still manage to buy a few of the clothes they want most and I think it is more exciting to shop with a limit of coupons —makes you think ahead quite a long way and wonder whether those pyjamas, which have completely taken your breath away, would really be a wise investment, when for the same number of precious coupons you could have a new frock. Shoes, gloves, frocks, coats—it is rather like a jigsaw puzzle I think. If you plan properly all the way and all the year, you will fit the pieces together so that you still manage to have those things you need most, but if you are reckless and in a moment of extravagance part with your coupons on some article which is pretty and frivolous, you may find, before long too, that you are going to be minus some very important part of your outfit for some months! Yes, shopping these days is really fun.

More and more of the girls in the city streets are in uniform now—some of them the acme of smartness too. I think of all the jobs which girls are doing today to replace the men, that of being a woman tram-conductor would be one of the most interesting, although by no means an easy or perhaps even enviable position, especially when Wellington is in one of her angry southerly moods. Yet these girls are there, doing their share with every bit the vim and vigour of the men they have replaced; and what smiling faces and pleasant manners they have too, despite our very crowded trams.

To these girls, who are so cheerful and bright and to everyone of you who has shouldered a burden which is testing your powers of perseverance and endurance, I take off my hat. You are doing a vital and wonderful work and we all hope that it will not be very long now before the last two lines of this verse by Robert Browning will be the truest words in the English language:—

"The year's at the spring,
The day's at the morn,
Morning's at seven,
The hillside's dew-pearled.
The lark's on the wing,
The snail's on the thorn,
God's in his heaven,
All's right with the world."

Mary

Mary's "At Home"

THE children and I have recently been trying to think of some way in which we could do something more to contribute to the new Christian Order or the promised post-war world. For it remains in the hands of each of us to do our share in building it, doesn't it? We must not push on to the shoulders of others the responsibility peculiar to ourselves, for we, while sharing the gifts of humanity, have an equal responsibility of consideration towards others. Well, we came across quite a helpful motto, which we have copied out, and decorated into quite a pretty picture. It reads:

"According to your faith so be it unto you.

"Then have faith in good!

"Fear is faith in evil.

"When you are afraid you believe in evil.

"Instead believe in good things

"And they will come to pass."

It has given the children quite a lot of amusement to pull mother up when she begins to become worried.

Let it rain, let it pour . . .

When the world's so wet you would scarcely feel startled if a fish flapped at your feet . . . you're still dry in a Rainster. Bad weather brings out the best in a Rainster That spartan English fabric is as waterproof, windproof and leak-proof as the skin of an otter. And the handsome cut brings out the best in you—all dash and vigour, with a really grand set about the shoulders. Wear one, and you'll feel like singin' in the rain . . . because you're smart and dry in the rain . . . dry in your Rainster—and you've never been so smart or dry in a raincoat before.

APOLOGY

Everything humanly possible is being done to ensure that everyone can get his Rainster. But our necessary and willing co-operation in the war effort means shortage from time to time.

BAD WEATHER BRINGS OUT THE BEST IN A RAINSTER

"Now Mummy don't believe in the evil!" says two merry voices. I have to smile and things don't seem half so bad if you can smile. Well, it's worth it, for many of us let fear creep in too often, don't we? And that surely is faith in evil. And if thoughts as in our motto can help children to understand they can master fear and believe instead in good and lighten their outlook the idea will have borne fruit. **—Tiggety Boo, Kati Kati.**

AS I write, the snow is lying thick on the ground, the heaviest fall we have had for years. The fir trees across the paddock remind me of an old English Christmas card, for their branches are weighed down with the snow. I am afraid I am no admirer of snow, for I always see the aftermath, when it becomes slush, and it is impossible to keep the house clean. Of course, young brother is delighted, for he has been longing for real snow. However, the snow will make my gardening easier, for the ground was getting very dry. Our potatoes and peas are well up, also broad beans. They make my mouth water just to look at them. Do you like new potatoes, young green peas and nice juicy broad beans Mary? It is a marvellous season for flowers. The farms on the hill have looked a picture this year.—**Biddi Jan, Redcliffs.**

I LOVED your letter about the birthday celebrations. How very much I agree with you! Birthdays are red-letter days in our family. Now the children are old enough to study calendars they count the days over and over again to make the day come quicker. I always feel sad when folk who are unable to have full-dress celebrations think the day must be almost ignored. But there's always the cake! Favourite dishes of the birthday one can be on the menu; they can have favourite chores, the favoured seat, and everyone can always try to be especially happy that day.—**Hay, Straw, and Donkey Feed, Kaukapakapa.**

I HAVE just heard from my brother in England that he is doing his bit by guarding a big building. I was sorry when I heard he was in the war again, for he is 65 and this makes the third war he has been in. But I can only look on the bright side and trust he will get through this one like he did the last two. He is my eldest brother too.—**Waikeria.**

THE birthday poem in this issue is such a joy that I must write and say thank you to you for quoting it. I have copied it into my Commonplace Book, opposite Ruskin's grand birthday wish . . . do you know it? "And it is your birthday! I don't know how to give you any wish that you would care to come true, but I will wish you, every birthday, some new love of lovely things, and some new forgetfulness

Swinging along into spring in high fashion is Iris Meredith of Columbia Studios. Her smart frock is styled in a full-skirted fashion, with a tailored upper section and stitched corselet belt. The sandals she wears with it are of gay-coloured raffia.

of the teasing things, and some higher pride in the praising things, and some sweeter peace from the hurrying things, and longer stay of time when you are happy, and lighter flight of days that are unkind." How I would love to whisk you over here to enjoy this lavish spring! Such a surfeit of blossom and bud; we could well spare some for your Wellington streets—a white plum tree and golden daffodils would make lovely reflections in your wet pavements. This morning there was a green-coated bellbird in the cherry plum—and it is white with blossom. And there are daffodils and snowflakes everywhere in the grass—you pick great armfuls and still there is gold at your feet. I showed Elizabeth Anne the wee white skirts of the snowflakes, each petal with its green spot and she said "Me have a skirt like that Mummy, one of these days."

We send you primrose gold, hyacinth blue and willow green for your box of colours and a big thank you for the new poem-treasure.—**Gweneth, Wakefield.**

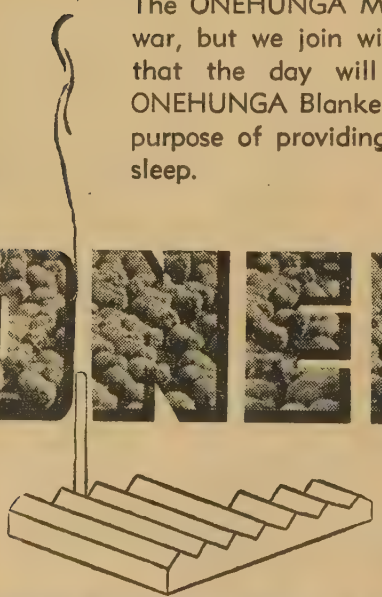
WHILE my brothers are away, I am busier than usual helping on the farm. I love animals, sheep are my favourites and I have my own dogs. At least, one is my own and the other has been lent to me for the duration by my brother. They are both very faithful and will not obey anyone else if I am around. In fact, I am told I litter the place up with animals and it is quite true too! I have two canaries, five white cats, two dogs and two pet sheep. And an unbroken young pony too!—**Nid, Amberley.**

I HAVE just read "I Lived These Years," by Eric Baume. It is a very interesting book all through, but one part struck me as being more than remarkable. The writer is speaking of the first blitz on London. "By dusk London seemed to be ringed with fires. On the riverside and in those industrial areas which suffered most at first, fires acres in extent were blazing. History will tell of the gallantry of the Fire Brigade services, of the later dash through the night of brigades from Liverpool, Manchester and many other cities, taking all possible risks over blacked-out roads to save the capital of England." Can you imagine it? Brigades from Auckland say, dashing to Wellington!—**Plain Jane, Taupiri.**

FOR WARTIME TRAVEL
and LIFETIME PLEASURE
These days you may have to wait for your new B.S.A. — but you'll be glad you did!
RIDE A BSA
THE BICYCLE THAT LOOKS PERFECT—
IS PERFECT—AND STAYS PERFECT.
4

Salute to MEN WITH WINGS

Men who live a lifetime in a split second need the best in rest and relaxation—and that's where ONEHUNGA Blankets are TO-DAY! Should you have any difficulty in obtaining your full requirements of Onehunga products, remember that the needs of the forces come first. The ONEHUNGA Mills are weaving for war, but we join with you in the hope that the day will soon come when ONEHUNGA Blankets will return to the purpose of providing you with peaceful sleep.



ONEHUNGA *Blankets*

ONEHUNGA TRAVEL RUGS ★ AIR CELL BLANKETS ★ ONEHUNGA WOOLLENS

Our Competition

When Peace Is Declared

THERE was no doubt in the hearts of any of you as to how you were first going to celebrate that day when peace is declared—one and all have the same—indeed the only thought—thanksgiving and quiet prayer to Him for peace in our land again. After that, well, there are lots of things you are all longing to do and here we have some of them. First prize in this competition goes to "Brynmawr," of Aramoho, with second to "Hay, Straw and Donkey Feed," of Kaukapakapa. I know you will enjoy these entries very much indeed.

First Prize

PEACE is declared! Hip, hip, hoorah! No more black-outs, no more rationing, no more apprehensive searching of the casualty lists, looking for something we hope we will not find. Oh, thank heavens it is all over. And now to celebrate. My first impulse is to set off on an orgy of shopping and feed up my family on all those things they have had to do without for so long: peanut butter, honey, raisins, dates, golden syrup; and to polish up every pair of shoes in the house with the blacking we have had to ransack the town for in the past; to buy skeins and skeins of wool, and knit and knit; to set off on an absolutely useless trip in the car and chew up oceans of benzine. However, a peace treaty does not realise all these things immediately and coupons will still be necessary for some time to come, so my celebrations will have to be modified somewhat. And now, when all is over, including the shouting what then? Are we content to drift along in the same old way? Many far-sighted folk are already working on a post-war reconstruction of this war-weary world. Is it not up to each of us to start at home and put our own house in order? We must educate our children—the coming generation—in the way of good citizenship; bring them up on the lines laid down by the Prince of Peace to do justly, to love mercy and to walk humbly with God. That is the eternal peace which can never fail before the assault of foes, the peace of the eternal city, in which the gentle heart bows to the love of God and to the service and sacrifice for others. This is the greatest citizenship in the world.—**Brynmawr, Aramoho.**

Second Prize

CELEBRATION usually calls forth ideas of eating and drinking in merry company, so we will call in our friends to eat the fatted calf and be merry. How merry? Shall we sing, or dance, maybe; throw darts, or play ping-pong; maybe go climbing, or touring; or, if we have passed far down Life's way, perhaps talk and remember? Each to his own taste will surely mark the day. But if we are truly glad that peace is declared, we will offer our thanks to God for our release from war. Our celebrations must be tempered with the realisation that peace is a responsibility for us all. We must treat our celebrations as a dedication, promising that we will fight harder this time to make the peace everlasting.—**Hay, Straw, Donkey Feed, Kaukapakapa.**

BECAUSE this war has brought the loss of an only and most beloved brother, I do not feel that I will be wanting to celebrate peace gaily. When the news comes over the air and the bells ring out, I should like the chance to get away quite by myself to our little country church and sit quietly for half an hour or so, just for a private remembrance and thanksgiving. Then, hoping for a day as fine as the news, I would drop everything and go with the children for a whole day's picnic, glad in my heart that the world is at peace, for them.—**G.L.S., Clinton.**

PEACE is declared, and the reaction? A holiday of gaiety, the workers stream out from the clugging wheels and picnic in the open, feeling a new happiness with each sunray; the thanksgiving—people offering up prayers, thankful that at last the breaking up of homes and the killing of innocent lives has ended. Maybe we would all be a little crazy for a time, but who would blame us? Perhaps the best way to celebrate would be for the more fortunate ones to try and bring happiness to those who have so many threads to pick up again.—**M., Feilding.**

LET us celebrate peace by making it a lasting one. We must keep in mind that defeated nations will want revenge. They have a young nation growing up, trained in Nazi principles of ruthlessness and world domination. If we do not realise this fact, all the flag waving, the cheering and the dancing, the thanksgiving, and monument unveilings, will be futile. If we are content with this way of celebration, as soon as another generation grows to bear arms, they will have another try—"if we let them!" Our celebrations must have as their watchword "Education in co-operation." The thought and practice of our lives is dominated by competition. This has its place in progress, but we want to face the future with courage and a determination not to make the old mistakes again.—**Corn Cob, Kaitaia.**

WHEN peace is declared (magic thought!) I would love to treat

I know wool is scarce these days, especially with the rationing system, but a tip from the Columbia star, Evelyn Keyes, who is shown here wearing a blue and white cablestitch sweater which she knitted from two old cardigans which were unravelled.

Competitions

October:

Competition for October — remember the subject was "My Dream Cowshed"— closes on NOVEMBER 15th. Do let us know your dreams of the ideal cowshed.

November:

No invention of recent years has been of greater value to the community than the radio. By the magic of radio, the most isolated homes are brought into constant touch with the outside world; by the magic of radio, music, mirth and melody have cheered us many a time. But what of the serials? To us they may be interesting and absorbing, but what of the effect on the minds of our children?

"WHAT IS THE EFFECT OF RADIO SERIALS ON THE MINDS OF OUR CHILDREN?"

Send your entries to me before DECEMBER 15th—there are two prizes, first of 10/-, and second of 5/-.

"MARY,"
C/o "Journal of Agriculture,"
P.O. Box 3004,
Wellington.

all those mothers whose sons served our country and never came home, to that which would please them most, whatever that may be. Some I know would choose a visit to the grave of their soldier son; others would realise the futility of that and wish to do something special that they had longed to do. This wish of mine I know to be a dream, for I have no likelihood of being able to do such a large thing, but that is my dream peace celebration—to do homage to their dear bereaved. But my dream unpractical, I am going to plant trees on that day, hearts of oak, good lasting trees that will commemorate for many years the strong souls that stood for victory. "There was a duty to be done, and they did it," giving their heart's blood. I cannot say I agree with Mary's idea of "lighting up"—I dislike a binge just because my pocket is full of sugar!—**Mrs. Vee, Waikato.**

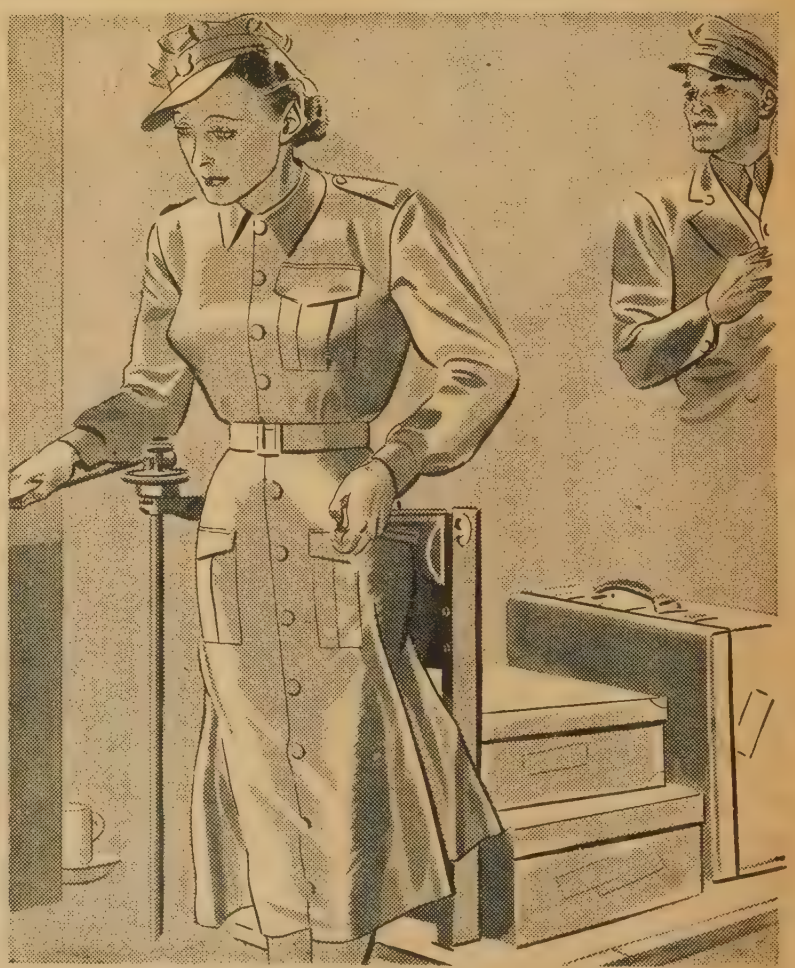
I WAS very interested in your idea, Mary, for an "individual" celebration when peace is declared. Last month I visited a son who lives on a sheep run in the backblocks and oh, what a relief to be free from black-out! My own home is on the sea coast and windows and lights are carefully shrouded at nightfall. I realised at the run what a strain the black-out imposes on us and will join you, Mary, in blinds up and lights on. My own reaction to the longed-for news of peace will be humble thanks that sanity has returned to the world, and for freedom from anxiety for the brave men who are defending us. Then away to the attic to relegate the knitting needles and the spinning wheel for at least a week, while I devour the newspapers and turn on the radio without being saddened by the incongruity and pathos of the news.—**C.I.B., Auckland.**

WHEN peace is declared—how we all pray that such a day will not be long in coming. First I shall say a reverent thank you to God, but I am sure to have difficulty in restraining the tears as I think of our brave New Zealand boys who have not been spared to return to the good green acres of home. The tears will really be for the sad hearts who wait in vain, as those who wait in the Beautiful Isle of Somewhere will be free from sorrow and pain. Then, the patriotic scales will fall from my eyes and I shall notice how shabby things have become during my National Savings campaign, so I shall get busy and plan all sorts of things to make the place spic and span and cheerful for the homecoming of our dear ones.—**Laurel, Feilding.**

Little Amazon, take care!

Everywhere, women are pouring their immense energies into the country's war effort. Not waiting for official leadership or recognition, but doggedly, steadily, purposefully going ahead on their own marvellous initiative.

This exacting new life could so easily over-tax slender nervous and physical resources — if it were not for Berlei. It isn't so much the longer hours, the heavier work that is the danger . . . but muscles poorly supported, poor posture on the job. So, little Amazon, look to your Berleis! In a Berlei your body is better balanced, better braced to take strain. Long periods of duty tire you less. You'll do double your duty, with the aid of Berlei!



Berlei
TRUE-TO-TYPE FOUNDATIONS

Have You a "Spare Tyre"?

I DON'T mean, by this question, have you a spare tyre for your motor car? I think you know what I do mean though—the sort of spare tyre that seems to form, all too easily, around your waist line. Even with the extra work and worry of wartime, the extra fat tissues still seem to form and you must do something about it, and no delay either.

Diet and exercise are the two most important factors in reducing. If you decide to diet, do please diet sensibly. Remember that you cannot run an engine without fuel and in the same way you cannot expect yourself to perform your usual daily tasks with your usual vim and vigour if you are cutting down on your food. Moderation, as in all things, is eminently desirable where diet is concerned and rather than cut back your food too much I would advise more exercise.

Starchy foods, such as bread, cocoa, all fried and fatty foods, are enemies to weight and should be avoided if you tend to become stout. Potatoes, as is commonly believed, are not going to put your weight up—they are eighty per cent. water and not fattening. Drink plenty of cold water and eat as much fresh fruit as possible, although I know that these days it is difficult to obtain as much fresh fruit as you would like to have.

Check up on your measurements with your tape measure. If you have an average figure, your hip measurement will be about 2 inches larger than the bust and the waist 10 inches smaller than the hips. The Americans compute normal measurements from the size of the wrist. According to this method your bust should measure 5½ times your wrist, waist 4½ times your wrist, hips 6 times your wrist, and upper thighs 3½ times your wrist. So out with your tape-measure!

As I said before, exercise is important. Keep a skipping rope handy and do five minutes skipping night and morning. This is splendid exercise and keeps the circulation in good condition, which in turn tends to lessen the danger of having chilblains during the winter months. Walking too is good exercise—you can never have enough of it. But for serious reducing, exercises are best. They may take up quite a bit of your all-too-valuable time, but it is time well spent. Shorts and a blouse is the ideal costume for exercises, for it permits of plenty of freedom of movement.

Here are a few exercises for you to try—but remember that it is regularity that counts and weigh yourself each week to make sure that your exercises are having the desired result.

Exercise is the surest way of reducing, and Bonita Granville, the young Metro-Goldwyn-Mayer actress, uses a huge rubber beach ball as an aid. Holding the ball high in the air, she bends from side to side to limber shoulder and arm muscles, as well as to keep the waistline in trim.

Lie on the floor with your body flat and raise the legs slowly until they are at right angles to your body, then bring them back. Repeat this ten times, but during this exercise you must not let your heels touch the floor until the tenth time. Not so easy!

Standing upright, bend your arms so that your hands are resting on your chest, palms outward. Now fling your arms out backward and downward, opening the chest and strengthening the chin and neck muscles. Now bring the arms up and straight out together in front. Do this fifteen times each night and morning.

Have you a natural bustle behind you? This exercise will help to free you of it. Lie on the floor, arms extended at shoulder level, the knees bent slightly, heels together. Keep both shoulders firmly on the floor, while you roll the hips over to the left, then roll them back as far as they will go to the right. Relax the waist and keep the weight on the buttocks. This is an exercise which you should try at least fifty consecutive times.

Now an exercise to strengthen the neck muscles. This is an exercise which must be done slowly to obtain the best results. Draw the head backwards to its fullest limit, then bring it forward till the chin rests on the chest bones. Now turn it to the left and right, then down, left, back and round to the front again, making a circular movement, very slowly. Finish up with the first movement of backwards and forwards.

If you want to strengthen up the muscles of your back, try this one. Sit on the floor, with arms stretched out sideways. Now swing round till the right arm points to the back and the left arm points forward. Return to the first position and then fling both arms back as far as they will go. This is a good exercise.

Remember the old exercise we used to do of touching our toes? See if you can still do it twenty times running. That will take a bit of the surplus fat away. And if you have a good floor space, try rolling along it every night and morning. This is an excellent and rapid way of reducing. And the exercise which is the most valuable for getting rid of that "spare tyre" is one which can be done anywhere, any time you think of it. Do it when you are sitting waiting for a train, or when you are in a train, anywhere, any time. Just take a deep breath and pull your stomach muscles in. It works like magic.

Winter weather always brings its dangers to the figure, for naturally we eat foods that are fattening and warming, but with a little regular attention and exercising, your figure should not suffer. Turn all your housework into exercises and stretch whenever you can. Hanging clothes on the line is excellent exercise, so is sweeping and dusting. So stretch while you work, exercise regularly for a short time night and morning and you will not be worrying about any figure problems this winter.

Helpful Hannah Says . . .

When preparing soap for the copper, grate it on a vegetable grater. Much more economical and melts quicker.

* * *

When cooking onions be sure to add 2 teaspoonfuls of sugar to each pint of water. Even when frying them, add sugar and they will not repeat so much. The same may be done with carrots, especially old ones.

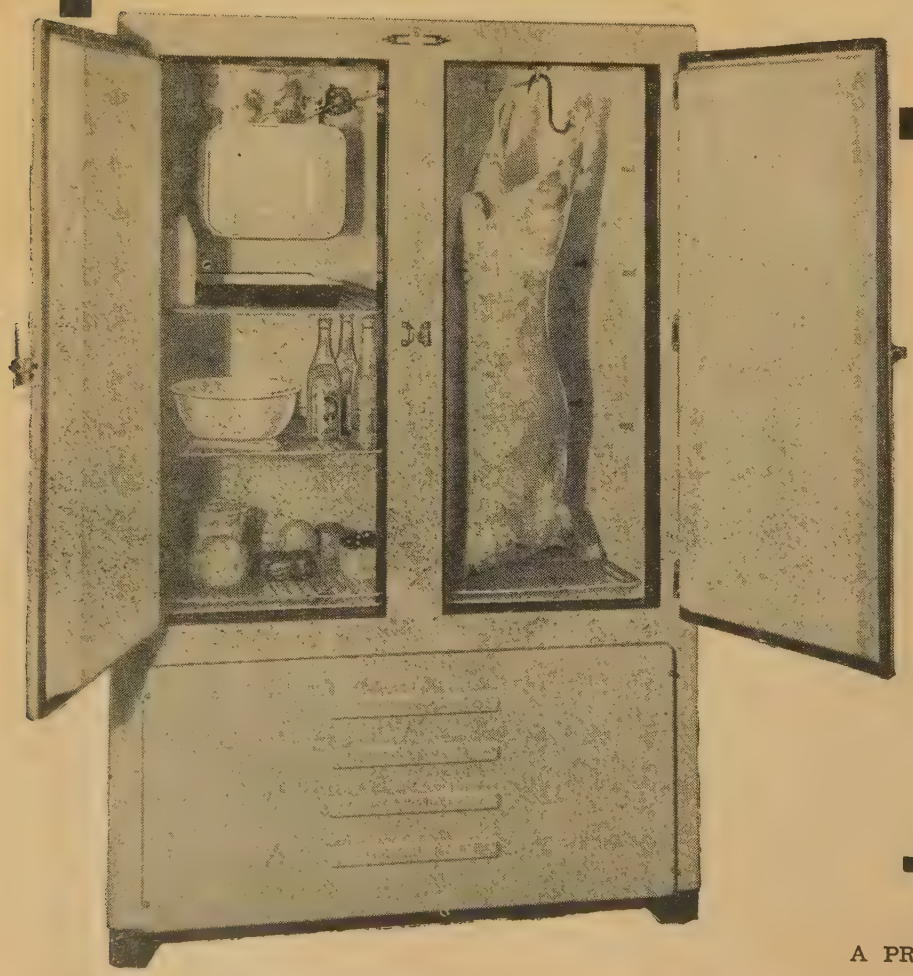
* * *

Keep your reels of silk and cotton in a jam jar. Saves tangling and any colour can be picked out in a hurry.

Take good care of your

FRIGIDAIRE

Keep in touch with your Frigidaire Dealer



THE requirements of the armed forces today are so great that refrigeration for civil needs has almost been put in cold storage for the duration.

But Frigidaire dealers everywhere are still fully equipped for complete servicing of every Frigidaire they have sold. Every part of New Zealand, however remote, is covered by **Frigidaire service.**

Thus, even in war-time, Frigidaire keeps faith with Frigidaire owners.

FRIGIDAIRE

A PRODUCT OF GENERAL MOTORS.

Mary's Mixing Bowl

Favourite Recipes

THE prize of 2s 6d for the best recipe is awarded to "M.," Feilding, for the following entry:—

MAPLE NUT-CAKES.

Roll out biscuit dough, made as follows:—2 cups flour, 4 level teaspoons baking powder, 1 teaspoon salt. Work in three tablespoons butter. Mix with 1 cup milk (add more milk if dough is not soft enough) and cut in halves. Spread one half with melted butter, and chopped walnuts and maple sugar (N.Z. brown sugar). Press on other half, cut in shapes, brush with milk and bake.

SHORT OAT CAKES.

2 cups oatmeal, 1 cup flour, 4-5 ounces of butter or dripping, 1-3 cup boiling water, 1 level teaspoon soda, 1 teaspoon salt.

Melt butter and add to it soda dissolved in boiling water. Mix all this with dry ingredients. Press out to ¼ inch thick. Cut in small squares and bake ½ hour on cold slides in hot oven. —**"G.L.S.," Clinton.**

THREE WAY CAKE.

1 large breakfastcup flour, ¾ large breakfastcup sugar, 3 eggs, 1 tablespoon butter, 4 tablespoons boiling water, 2 level teaspoons C. tartar, 1 teaspoon soda.

Method: Beat eggs and sugar well, then add sifted flour and rising. Lastly, add butter and water. Bake in sponge tins 20 minutes. For chocolate sponge add to above mixture a dessertspoon cocoa, 1 teaspoon ginger and cinnamon. When cooked, ice with chocolate icing and put walnuts on top. For orange cake, add to top recipe juice and rind of 1 orange.—**"R.M.D.," Takaka.**

SAVOURY PIE.

½ lb. short pastry, ¼ lb. bacon, 1 tin baked beans or tinned peas, 1 or 2 eggs. Salt to taste.

Line pie plate with pastry and cover bottom with half the bacon cut into small pieces. Next spread over the tinned beans or peas (grated carrot and onion may be used instead), and finish with the rest of the bacon. Pour over the beaten egg and cover with pastry. Bake ¾ hour in a fairly hot oven until pastry is cooked and browned top and bottom.—**"J.F.," Auckland.**

CORNED BEEF RISSOLES.

4 oz. corned beef, 4 oz. breadcrumbs (brown bread is best), ½ lb. mashed potatoes, ½ lb. mixed vegetables, cooked and mashed, 4 tablespoons brown sauce or vegetable water. Seasoning. Pinch mixed herbs.

Flake the corned beef, and mix with the mashed potatoes and vegetables; add breadcrumbs and seasoning. Bind the mixture with the brown sauce or vegetable water. Bake in a quick oven about ¼ hour, or until golden brown. Serve with mashed potatoes, greens, and gravy.

Either make one large roll or roll into rissoles. I make rissoles as they are easier to serve.—**"Biddi-Jan," Redcliffs.**

MOCK PEAR PIE.

In a saucepan put 1 cup boiling water, ½ small cup of sugar, and 1 teaspoonful of golden syrup, and boil gently. Peel core and quarter 6 or 7 medium-sized Sturmer apples. Put in syrup and keep

It's Made with

Edmonds ACTO

Baking Powder

Therefore it's Good!

Baking is always successful when you use Edmonds ACTO Baking Powder. It's utterly reliable and never varies. Use exactly as specified in the recipes—there's no need to use an extra dash. Edmonds ACTO is as consistent and successful as the famous Edmonds "Sure-to-Rise." It's Edmonds—therefore it's good!

A Product of T. J. Edmonds Ltd., makers also of Edmonds "Sure-to-Please" Custard and "Sure-to-Set" Jellies.

stirring so that all apples are coated with syrup.

Line a pie-dish with short pastry. When apples are soft but not mashy, place carefully in pie-dish. To syrup left in saucepan add 1 dessertspoonful of butter, ¼ teaspoonful of vanilla. Thicken with 2½ teaspoonsful of cornflour mixed with a little water. Pour over apples and criss-cross remaining pastry. Bake for about ½ hour. Serve with cream or custard, and it tastes like pears.—**"Tiggety Boo," Kati Kati.**

DATE SURPRISES.

2 oz. sugar, 4 oz. butter, ½ lb. flour, 1 egg, 1 teaspoon baking powder.

Cream butter and sugar, add egg, then flour, etc. Roll thinly, cut in rounds, spread dates in. Fold over, and press edges together. Cook in a slow oven for 20 minutes.

TOMATO TOAST AND CHEESE.

6 slices of bread, 2 tablespoonsful butter, salt and pepper, cheese, 1 cup milk, 3 tomatoes, 1 egg.

Beat egg lightly, and add milk, salt, and pepper. Dip the bread into this mixture, allowing the slices to absorb all of it. Lift on to a greased pan, and dot butter over them. On each piece of bread lay a thick slice of tomato, sprinkle with salt and pepper, and on top put a thin slice of cheese. Bake 12 minutes in quick oven, or place under a griller until tomato is tender and delicately brown.

APPLES BAKED IN HONEY.

6 large cooking apples, 1 cup honey, 2 cups water, cloves.

Wash and core apples, stick a clove in each, and place in baking pan. Heat honey and water together, pour over the apples, cover and bake 1 hour or till apples are soft. Baste frequently during cooking. Serve cold.

BACON BALLS.

A few slices of fat bacon, and pieces of the crumb of the bread (about the size of a walnut), one hard-boiled egg, pepper and salt. Remove the rind of the bacon, and dip the pieces of bread into hot dripping. Wrap a piece of bacon around each piece of bread, and secure with a tiny skewer. Fry in the usual way, and dish heaped up, and surrounded with fried potatoes. Sprinkle with chopped parsley, and grated hard-boiled egg.

CREAM CAKES.

¼ lb. butter, 3 eggs, 1 cup flour, 1 teaspoon baking powder.

Cream butter and sugar, add eggs, flour, and powder. Bake in patties for ten minutes, when cold cut off tops and fill with whipped cream. Sprinkle with icing sugar.

Table of Contents—October, 1942.

Serpentine Superphosphate Increases Production—A. H. Cockayne 193
Properties of Phosphatic Fertilisers—R. B. Tennent .. 195
Onion Seed Production in Marlborough—D. R. Wilkie 197
Mangel Poisoning in Pigs—W. D. Robinson 199
Grass Mixture for Pumice Soils—C. S. Dalgleish .. 203
Erysipelas in Pigs—W. D. Fischel 207
Subterranean Clover; Progress in Marlborough—D. R. Wilkie 213
Production of White Clover Seed in North Canterbury—E. G. Smith 217
Should the Marine Flats on the Hauraki Plains Be Topdressed?—C. Walker 221
Veterinary Notes—Livestock Division 223
Farm Practice and Management—Fields Division .. 227
Slaughtering of Stock 230
Radio Broadcasts 230
The Orchard and Vineyard—Horticulture Division .. 233
Guide for the Home Garden—Horticulture Division .. 236
Apiary Notes—Horticulture Division 239
Poultry-keeping Section—Livestock Division 241
Young Farmers' Clubs—S. Freeman, Editor 244
Health Notes—Department of Health 246
"The Good Neighbour"—by Mary 247

SUBSCRIPTION RATES.

The *Journal* is issued monthly. The subscription within New Zealand, which is payable in advance and includes postage, is 2s. 6d. a year. The overseas subscription is 5s. Subscriptions should be forwarded or paid direct to any office of the Department of Agriculture in the Dominion. Single copies, price 6d., are available from the Department of Agriculture, Box 3004, Wellington.

COPYRIGHT PROVISIONS.—The articles in the *Journal* of the Department of Agriculture of New Zealand are copyright. Proprietors of newspapers and periodicals wishing to republish any matter are at liberty to do so, *provided both the Journal and author are acknowledged.*

The Minister of Agriculture does not accept responsibility for any of the private and trade advertisements included in this publication.

GINGER BEER.

2 gallons water, handful hops, 1½ lb. sugar, 2 tablespoons root ginger.

Boil for 1 hour. Let cool a little and put into bottles.

CHEESE STRAWS.

2 oz. butter, 2 oz. flour, 2oz. cheese, 2 oz. breadcrumbs, pepper, salt.

Mix grated cheese, breadcrumbs, flour, and butter. Add pepper and salt. Roll into thin strips and bake.

SPINACH LOAF.

1½ cups cooked spinach (drained dry and chopped), 1 cup stewed tomato, drained as dry as possible; 1 cup cheese; 1 tablespoon butter; 1 tablespoon grated onion; 2 eggs.

Mix all well together, put into a greased dish, and bake till set. Delicious for tea.

MACARONI AND NUT CUTLETS.

1 cup raw macaroni, 1 cup minced nutmeat, 2 heaped tablespoons flour, 1 cup milk, 1 egg, breadcrumbs.

Boil the macaroni in salted water, drain and chop fine. Boil the milk, and thicken with flour. Stir in the egg, well beaten. Add the macaroni, nutmeat, salt, and make stiff with breadcrumbs, so that it can be formed into cutlets. Put into a greased dish and bake till browned.

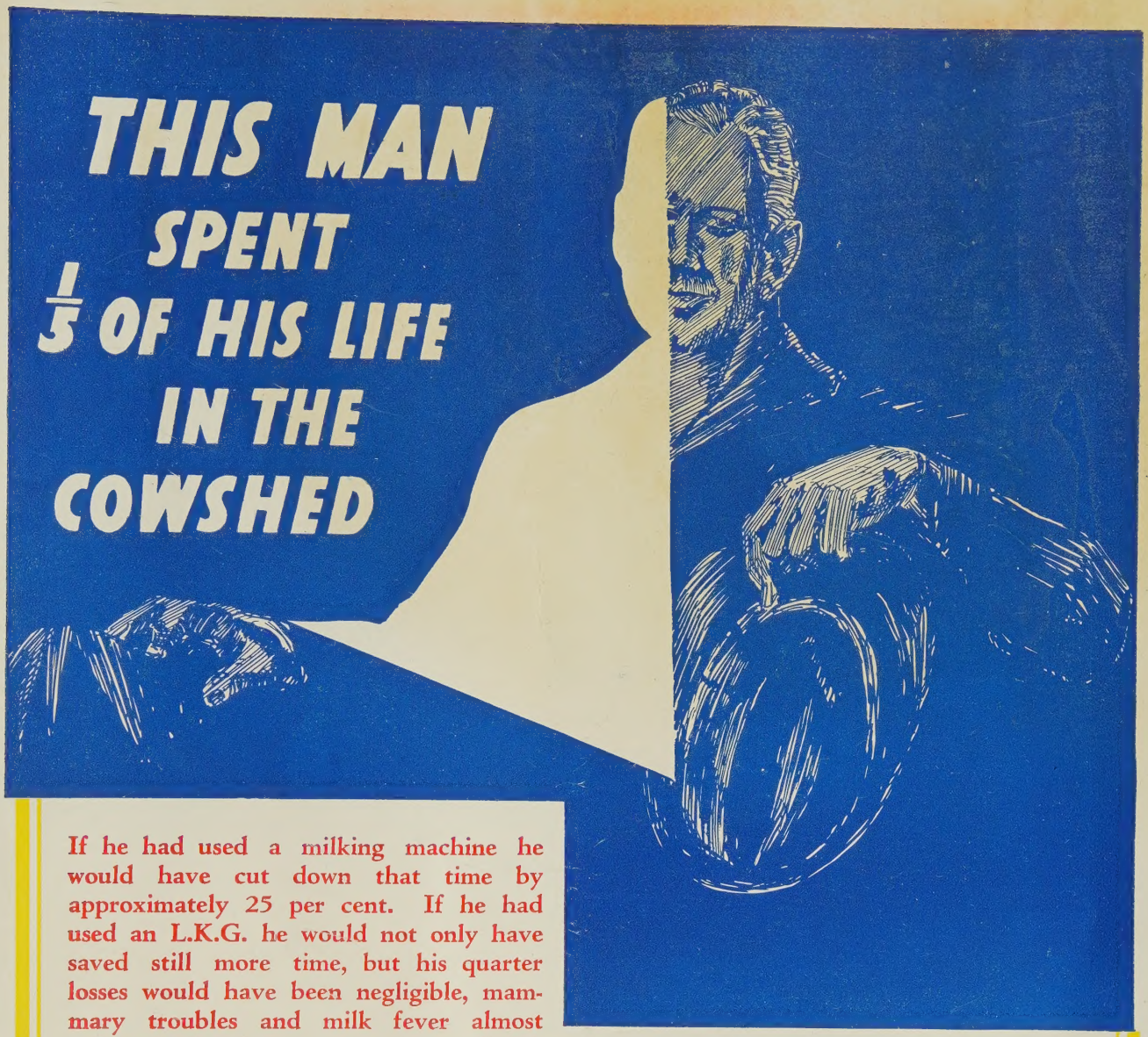
MOCK WHITEBAIT PATTIES.

2½ tablespoons flour, 1 level teaspoon baking powder, 1 egg, 2 heaped tablespoons grated cheese, 1 medium-sized potato, grated, 2 tablespoons milk.

Beat egg, add flour, milk, cheese, and seasonings. Add potato and baking powder just before frying. Fry in shallow fat five minutes on each side. Serve with parsley.

Printed by Blundell Bros. Ltd. (The Evening Post), Wellington.—9077.

THIS MAN SPENT 1/5 OF HIS LIFE IN THE COWSHED



If he had used a milking machine he would have cut down that time by approximately 25 per cent. If he had used an L.K.G. he would not only have saved still more time, but his quarter losses would have been negligible, mammary troubles and milk fever almost unheard of and, more important still, his milk cheques would have been much higher.

The above statements are facts. The L.K.G. IS the foremost milker; MacEwan engineers HAVE been successfully coping with milking problems since 1902, and the L.K.G. DOES embody the latest improvements which sound milking practice has indicated.

Standardise on an L.K.G. You get the soundest machine, the most efficient service, and all the newest additions.

MacEwans
LIMITED

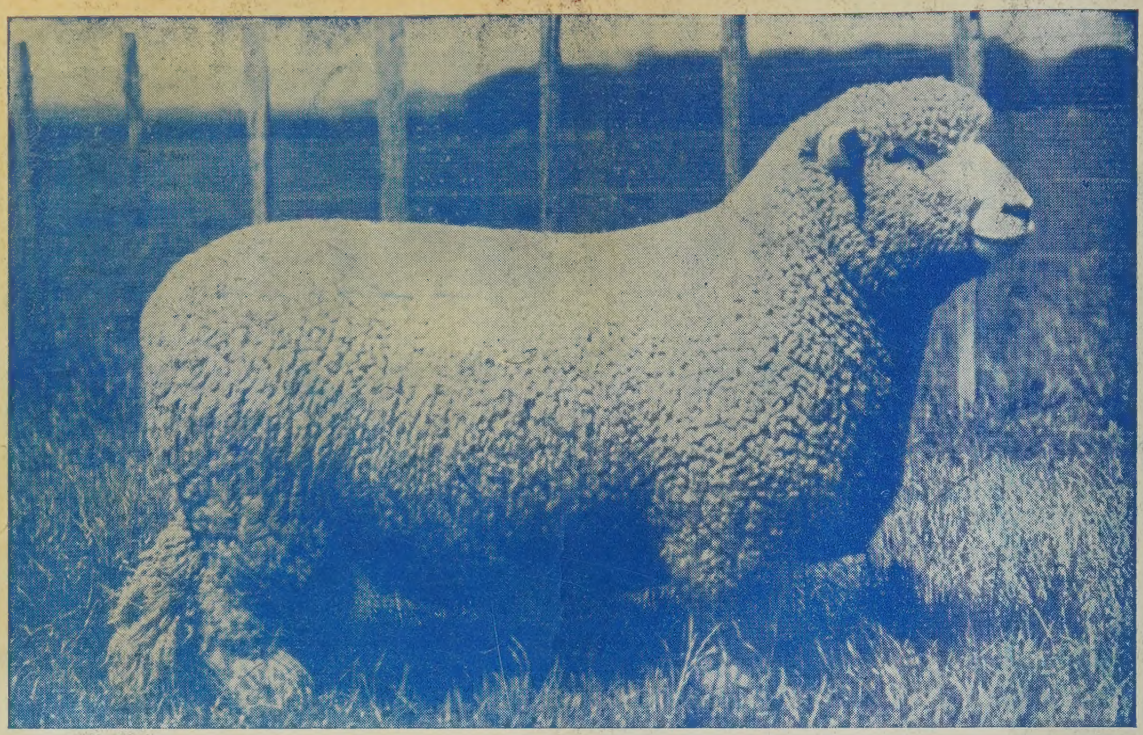
MacEwans Machinery Ltd., Auckland and Hamilton. Agents at Galatea, Pukekohe, Te Aroha, Te Puke, Thames, Wairoa and Whangarei.

Messrs.. J. B. MacEwan & Co. Ltd., Wellington, Palmerston North, Carterton, New Plymouth, Stratford, Hawera, Opunake and Ohura.

Agents: Messrs. C. W. Parker & Co. Ltd., Blenheim.

Messrs. Reid & Gray Ltd., Dunedin, Balclutha, Gore and Invercargill.

ANOTHER "WONDER" TRIUMPH!



THE ILLUSTRATION SHOWS ONE OF THE SIRES USED IN THE WELL-KNOWN FLOCK OF "BECKFIELD" QUALITY ROMNEYS (MR. W. H. GIBSON).

This flock comprises some of the most sought after strains throughout New Zealand, Australia, and the Argentine.

Innumerable prizes taken throughout New Zealand, which include 1936-37 Royal Champion Ewe; 1938 Reserve Champion Ewe; 1940-41 Champion Ewe at Christchurch.

THE "BECKFIELD" STUD FARM ARE LARGE AND CONSISTENT USERS OF "WONDER" PRODUCTS.

Here is a palatable, balanced and specially prepared mixture that is easily digested and assimilated; that furnishes desirable ingredients to compensate for *POORNESS OF PASTURE OR ANY MAJOR SOIL DEFICIENCY;* that is invaluable as much in cases of malnutrition as in promoting the growth of young animals.

In view of the petrol restrictions and the consequent reduction in travellers' calls, direct orders from Producers would be welcomed.

Under present circumstances it is a national duty to keep stock of all classes in the best of condition.

WONDER MINERAL STOCK FOOD

Manufactured and Distributed by WONDER DISTRIBUTORS LTD., P.O. Box 129, Feilding.
FACTORIES AT PALMERSTON NORTH AND CHRISTCHURCH.